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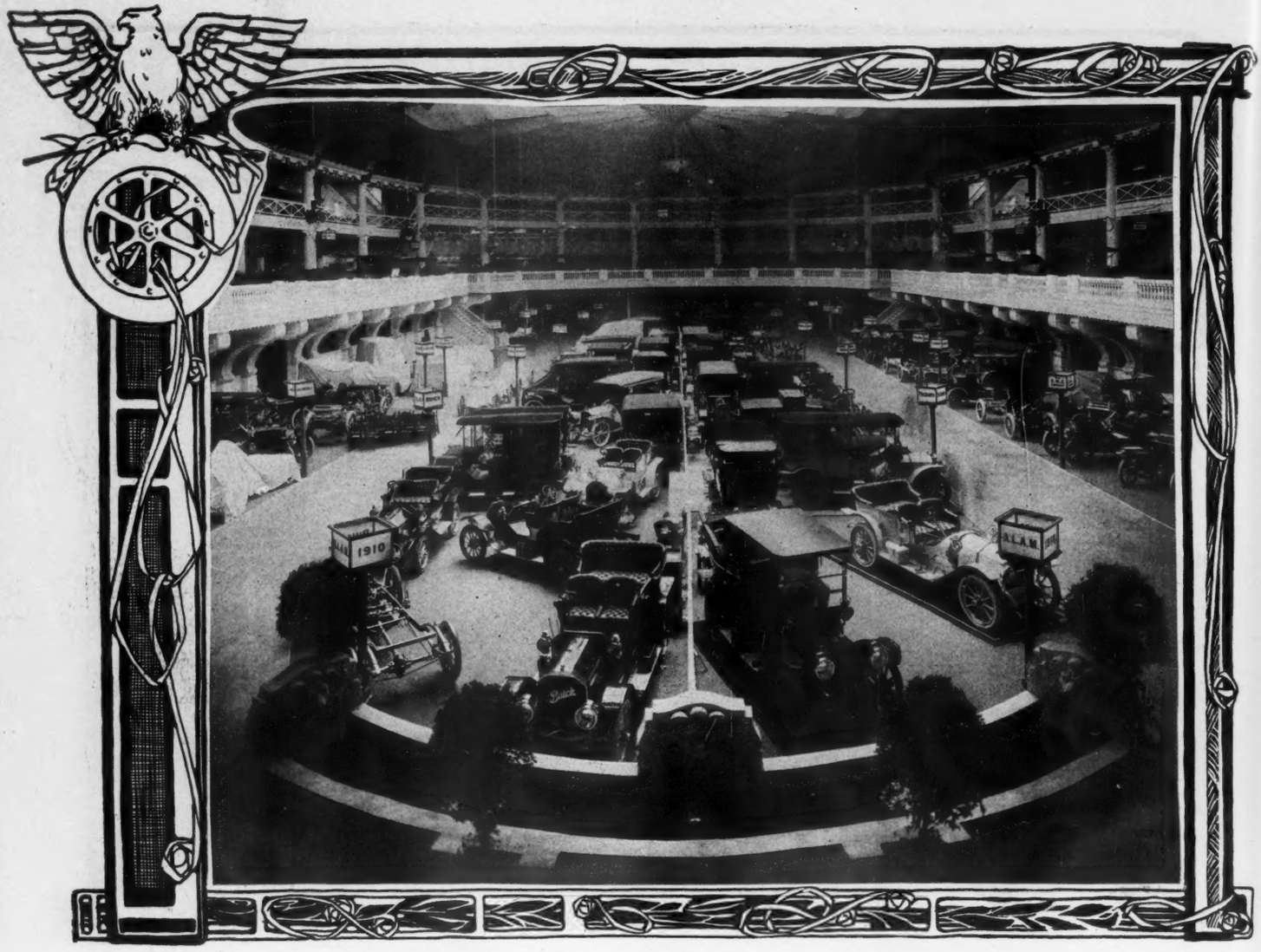
MOTOR AGE

Garden Show At Its Zenith

NEW YORK, Jan. 9—For the first time in motor history New York is enjoying a 2-week continuous show, which condition is brought about by the fact that the independent affair of 1 week closed Friday and without any interruption in the continuity the tenth annual display of motor cars manufactured under the Selden patent began last evening in Madison Square garden with the idea of running another week. New York gave full support to the A. M. C. M. A. effort in the Grand Central palace, as was shown by the announced attendance of 110,000 for the week, while the indications are, judging from the immense crowd in the garden last night, that the show that now has its inning will attract as many if not more than the palace. The garden figures ought to be much larger, for in the first place the New York crowds always turn out for anything and everything that is held in the garden, and then again the A. L. A. M. has the advantage of having a building that is more fitted for show purposes than is the much-cut-up Grand Central palace.

The opening of the A. L. A. M. show last night was a most auspicious one. As usual there was the eleventh-hour rush to get everything in shape, and at 3 o'clock it looked a hopeless task. At that hour not more than two-thirds of the exhibits were in the building, and not many of those had been installed. Burlap and paper strewed the floor, and the aisles were jammed with workmen pushing and tugging to get the cars into place. But those last few hours made all the difference in the world. True, the show was not in readiness at the appointed hour—8 o'clock—and for 20 minutes the crowds were held in check out of doors, but when the signal was given to open the show the aisles were filled in a jiffy with the usual first-night crowd. Apparently this crowd was much larger than on previous opening nights, for at 9 o'clock it was almost impossible to move about the aisles, and even as late as 10 o'clock the same congested condition existed. The band played "Home Sweet Home" at 10:30.

It had been announced by the show committee that this year's decorative scheme would eclipse all others, and this prediction was borne out when the show really opened. The Roman amphitheater is there in all its beauty, the general idea being that of spaciousness. From the front door one can take in the entire show, with the exception of the commercial and electrical displays, with one sweep of the eye. As one enters the building from the Madison avenue side of the garden there faces him a Roman fountain which is fronted with



LAYOUT OF THE GARDEN AS ONE ENTERS THE HALL FROM THE MAIN ENTRANCE

a curbing seat, while the water from the fountain drops into a low, narrow basin in which are found goldfish, natural pond lilies and artificial water plants. Above a sky effect is secured by the use of 7,000 yards of blue bunting in which twinkle incandescent lights. More bunting hides the bare walls of the building, and every 25 feet there is a Doric column which is 25 feet in height and which is surrounded with the show emblem which consists of an eagle mounted on a wheel. The whole effect is decidedly pleasing, the predominating colors being silver and white, while there are enough lights in the building to illuminate all Broadway, it would seem.

Main Floor All Cars

Of course the main floor of the garden is given up to the cars. As one passes the fountain on the right there is the Packard display, with the Pierce-Arrow as its next door neighbor; on the other side of the fountain is the Buick, while among the others which hold forth in the arena are the Elmore, E-M-F, Studebaker, Chalmers, Knox, Cadillac, Thomas, Franklin, Winton, Alco, Stevens-Duryea, Lozier, Columbia, Simplex and Peerless. Those cars which could not squeeze in in the first floor are found in choice balcony lacations, but it required considerable engineering skill to get the machines in place, it being necessary to employ a derrick to hoist up the cars. But once in place, though, it is apparent that the result is well worth the pains taken to get them there. Balcony neighbors of the car makers are the accessories people, who grabbed every inch of available space. The electrics are segregated in a room by themselves on the right side of the main hall leading into the arena, while the commercial machines are in the basement.

The first night of the show brought out that the A. L. A. M designers have been busy on bodies just as have been the A. M. C. M. A. engineers, and as a result the main talk of the evening was on the many types of torpedo bodies to be seen, there being no fewer than eight ideas along this line. All of them are not the true torpedo, however, some arriving at this style of body by simply putting on front doors. The Winton has a tasty-looking runabout with a rear that resembles the stern of a battleship, which is attracting considerable attention. The Royal Tourist torpedo is unique for the location of the gasoline tank, which has been placed at the rear of the front seats, and which does not take up as much room as one might think at first, and not only is the tank well protected in this manner, but it affords an almost unlimited capacity. The White people have a torpedo body on its gasoline car which seems to meet all qualifications in this direction, while the Knox also has one which seems to fill the bill. The Lozier, Palmer-Singer and Franklin torpedoes are well known, having been on the market for some little time.

Touring Coach Displayed

While offering nothing in the torpedo line, the Pierce-Arrow people are showing a touring coach which is a brilliant orange in color and which is fully equipped to meet all road contingencies. It carries five trunks and every nook and cranny has been utilized for baggage space. It is of the landaulet type, so that the rear can be let down in pleasant weather, while the chauffeur is protected from storms by a glass front and leather canopy. The running boards have been made into bagg..ge

END OF THE GARDEN LOOKING DOWN FROM ONE OF THE BALCONIES

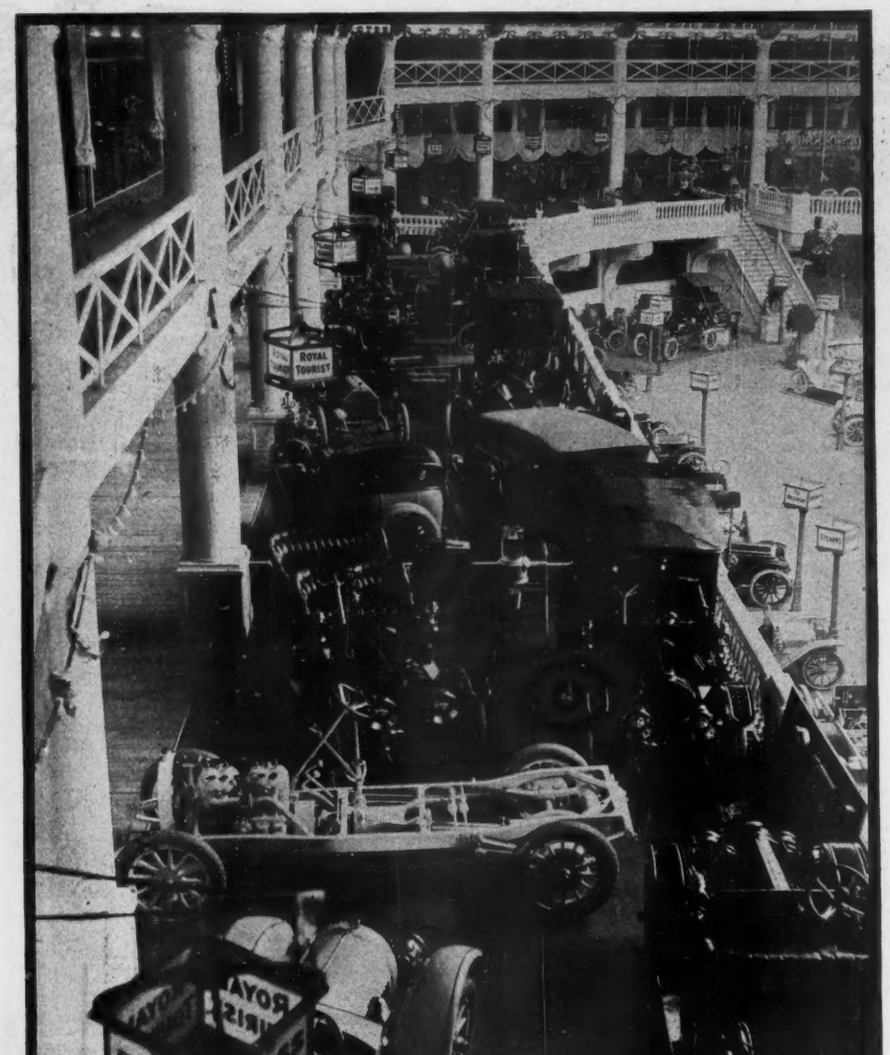
receptacles and are in reality long boxes which are somewhat higher than the conventional step. A feature in this connection is that as the landaulet door opens another step is automatically let down so that the passengers can easily reach the ground. In the tonneau are all toilet conveniences. The Packard exhibit has for its feature a four-doored limousine, the driver being protected in as ample a manner as the passengers in the tonneau. This is the only departure from the conventional body types the Packard has made, but its exhibit also includes several cars finished in startling colors. For instance, one of them—a touring car—is finished in a bright yellow, the idea being further carried out by the use of yellow tires. A Packard landaulet has a body with a silver background and a blue fleur de lis design running around it. The same color effect is retained in the interior fittings.

The public's interest in racing and other forms of motor competition is catered to in the display of trophies, which includes the Vanderbilt cup, the Glidden tour prizes, Indiana trophy, the Massapequa cup, Merrimac Valley cup, Brighton Beach 24-hour race trophies, the Dewar cup, and the Sewall, Alden, Tanforan, Thermoid, Lowell, Fairmount park and other trophies. The only racing car in the building is the Alco, in which Harry Grant won the Vanderbilt cup.

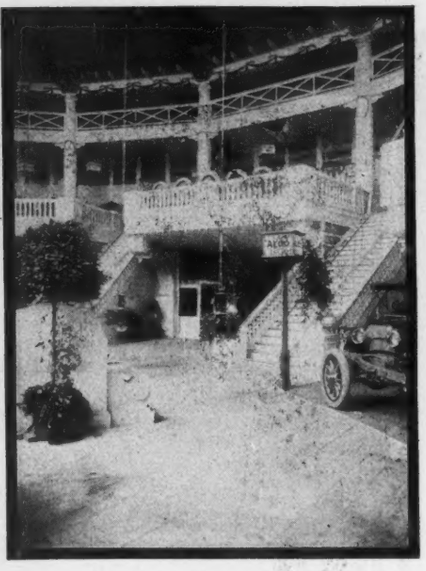
Palace Show a Success

The palace show, which closed Friday night, is declared to have been the most successful one ever promoted by the American Motor Car Manufacturers' Association. Despite the fact that so many of the independents have joined the Selden association the public displayed a keen interest in the display of cars at the palace, as was evidenced by the announced attendance of 110,000 for the week. It was a satisfied lot of exhibitors that left the building Friday night and the promoters are congratulating themselves on the fact that they had not received a single protest from any of those who occupied space. Every corner was utilized and if the building had been larger there would have been no difficulty experienced in selling additional space. The dealers, too, were more numerous than ever before by some 300, the books showing that 1,500 agents had registered at the palace. Had it not been that both the makers had disposed of their outputs long before the show there would have been no difficulty at all in securing agents in all parts of the country. The retail sales were larger than usual, but throughout the week it was noticeable that the demand was greater than the supply, bearing out the prediction that there will be a dearth of cars during the coming season.

Outside of show matters there has been considerable activity displayed along other motoring lines, caused by the gathering of the clans which have been brought out by the big shows. The American Automobile Association took advantage of the opportunity to hold several meetings and to appoint some of its more important committees, notably the contest and technical boards. Sam Butler had been named as chairman of the contest board some weeks ago, but Friday he announced that the active members of his board would be David Beecroft, of Chicago; S. B. Stevens, of Rome, N. Y.; T. A. Wright, of Wilkes-Barre, Pa., and Joseph H. Woods, of Newark, N. J. He also named associate mem-



LOOKING DOWN ON BALCONY FROM THE PRESS GALLERY

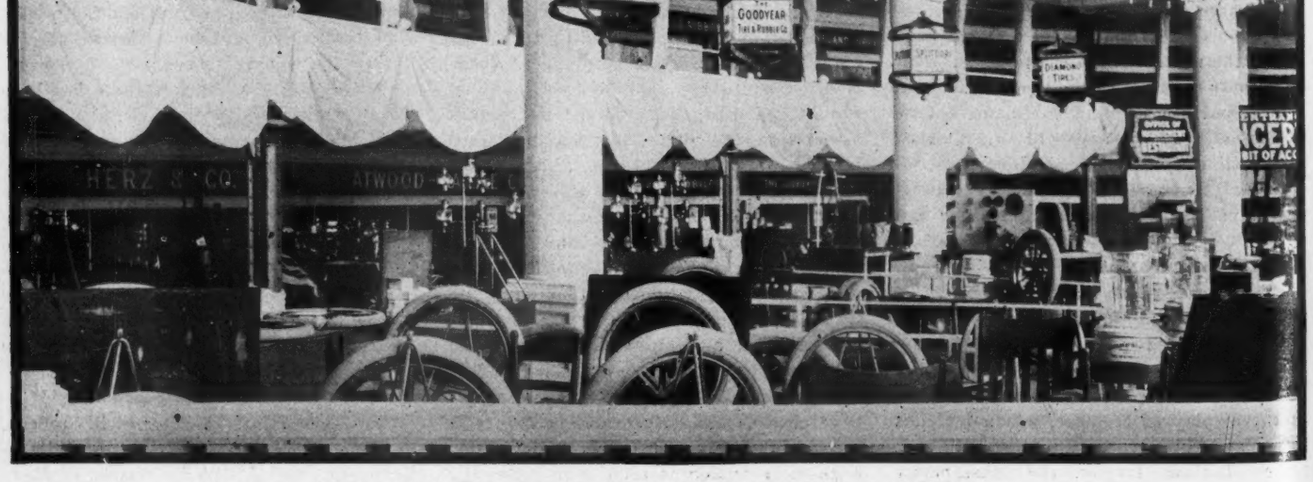


NEAR THE MAIN ENTRANCE

bers in various sections of the country. The technical committee, as announced, is made up of A. L. McMurty, of New York, David Beecroft and F. E. Edwards, of Chicago; Henry Souther, of Hartford, Conn., and Alex Churchward, of Schenectady, N. Y. In a few days additional appointments on this committee will be made covering the middle west, Pacific coast and southern territory.

M. C. A. Holds Meeting

The Manufacturers' Contest Association, which was organized in Chicago a year ago, held its annual meeting Saturday morning, practically re-electing its old officers. Benjamin Briscoe still is president, W. E. Metzger secretary-treasurer, and Russell Field is his assistant. Howard Coffin holds over as chairman of the rules committee, while H. O. Smith has been made vice-president. The directors consist of Messrs. Briscoe, Smith, Metzger, Coffin, and Windsor T. White. That the M. C. A.



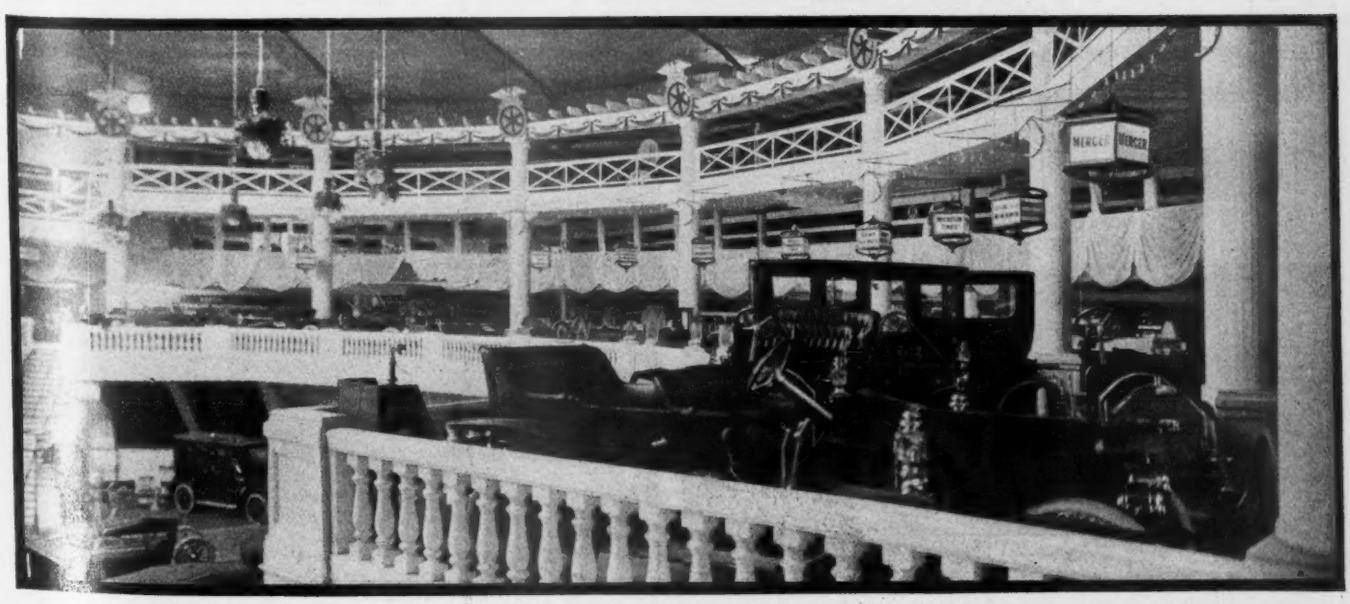
ACCESSORY CONCERNS HAVE SNUG LOCATIONS IN THE VARIOUS BALCONIES

BIRDSEYE VIEW OF THE SHOW

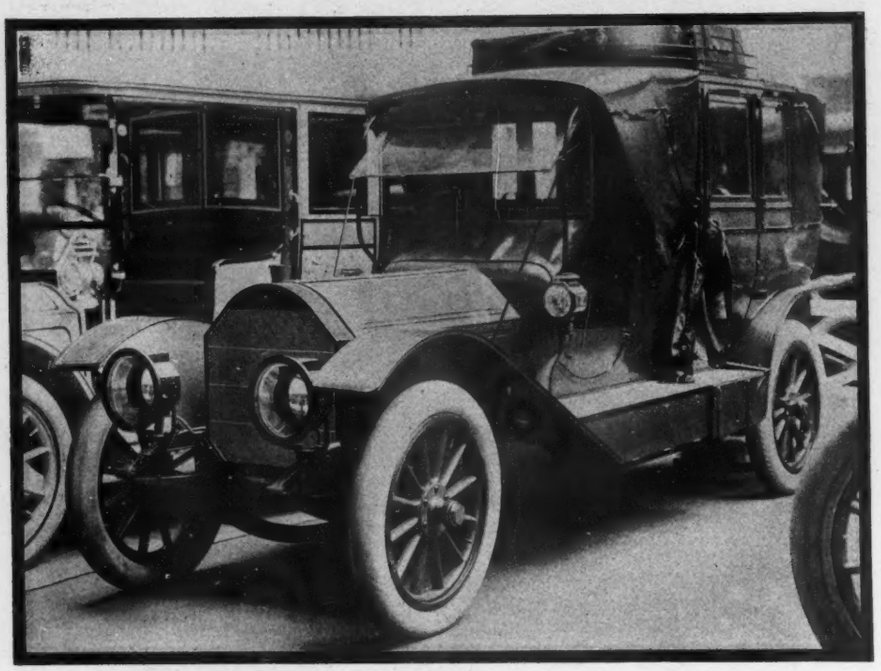
is a live and active body is shown by the attendance at this meeting, among the makes represented being the Apperson, Brush, Buick, Fiat, Hudson, Knox, Maxwell, Everitt, National, Marmon, Oakland, Pierce-Arrow, Haynes and Premier.

While no facts were given out yesterday it is stated that within a day or so the association will be prepared to tell just what it did in the way of revision of the racing rules and other refinements of the competition game. It is understood here today that the M. C. A. has brought about a radical change by the adoption of a sliding scale to determine a car's stock qualifications. Hereafter each maker entering competitions will have to make a certain number of cars of the particular model which he is entering, which is far greater than heretofore. It is said that one prominent concern will have to make 450 cars of one model to have that model eligible for competition.

A GLIMPSE OF THE CARS ON THE BALCONY



SOME OF THE SCENIC EFFECTS SECURED BY THE GARDEN SHOW PEOPLE



PIERCE-ARROW TOURING COACH READY FOR THE ROAD

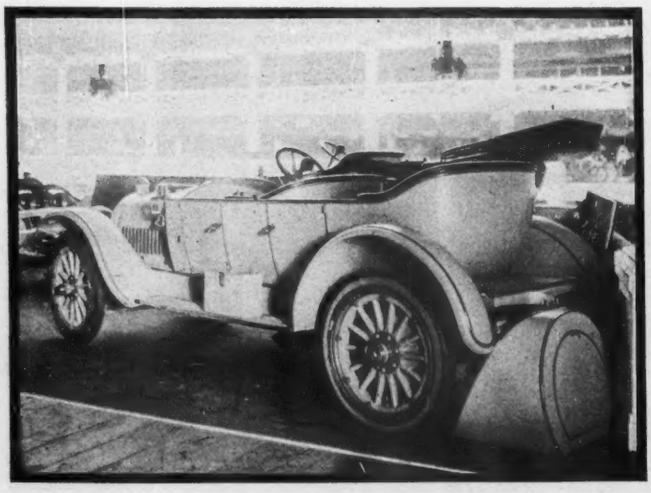
Trend of Motor Car Design

Brakes and Clutches

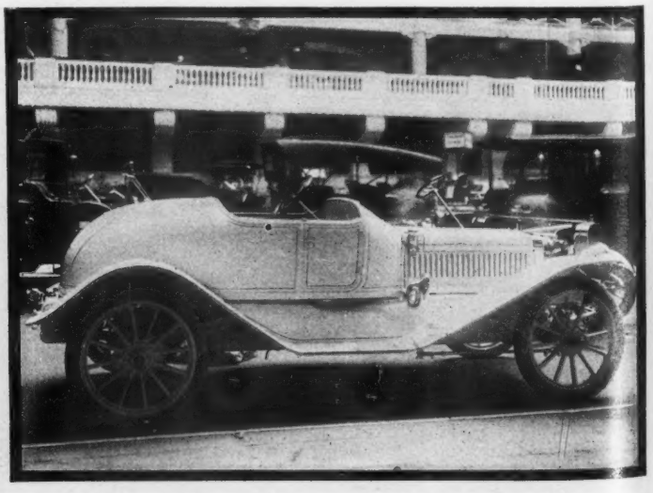
ROYAL TOURIST GASOLINE TANK

STRANGE as it may appear at first sight to the layman, there is a most direct and intimate connection between the design of clutches and brakes. One develops friction for the purpose of transmitting power, and the other for the purpose of absorbing it. In fact, the theory has been advanced as a basis for the calculation of brake sizes, that a set of brakes capable of absorbing the same amount of power that the clutch of the same car was capable of transmitting, would be all sufficient for the car in question. No great amount of figuring, or, for that matter, the possession of any technical or mechanical knowledge, is required to realize the fallacy of this. It omits any reference to the all-important time factor—brakes must not alone be capable of stopping a car; their ability must be measured by the brevity with which they accomplish it. The conditions which govern the acceleration of a car are usually entirely of the driver's making. He may start slowly, or get under way in a very short distance, provided the clutch of his car permits of rapid acceleration, but in either case the matter is something under his direct control. This is quite the contrary when the question of stopping is considered—at least 50 per cent of the stops made by a car are involuntary, some of them decidedly so, especially in the city.

Consequently, a car that had brakes no more powerful than its clutch, where the ability to absorb power was concerned, would not run many miles before its chief weakness would be discovered. As a matter of fact, there is such a contrast in the period of acceleration and deceleration customarily followed, that even 3 or 4 years ago, it was customary to provide braking equipment capable of absorbing at least four times as much power as the clutch was capable of transmitting. The ability to accelerate to a speed of 25 miles an hour from a standstill in a space of 300 feet is considered ample and there are many cars which are not capable of meeting this test today and doing much more. On the contrary, how often is it considered extremely desirable to come to a stop from a speed of 25 miles an hour in the course of 30 feet or less? To be able to do so, the capacity for absorbing power must be



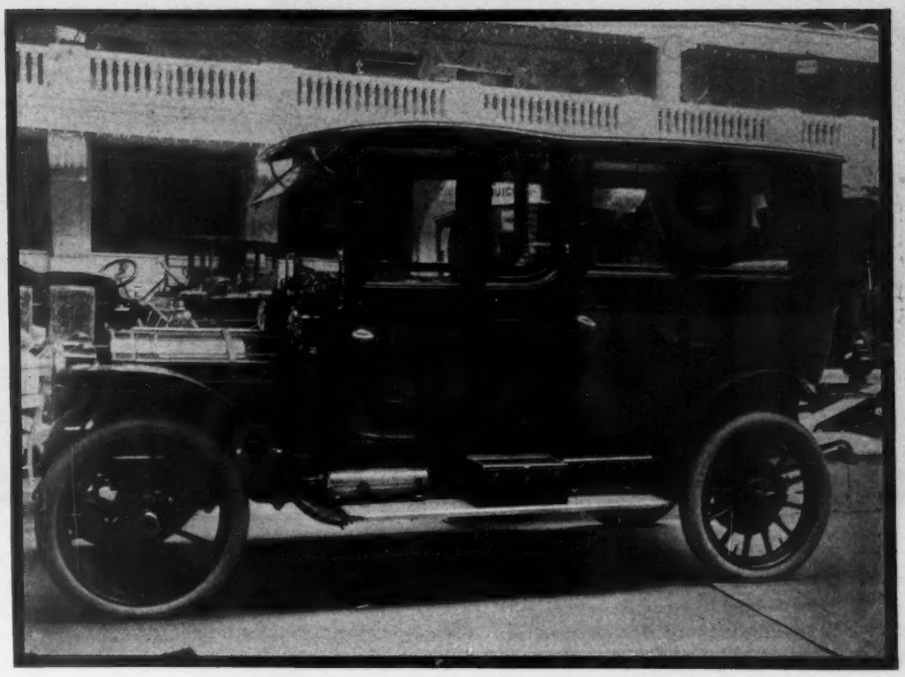
ROYAL TOURIST FITTED WITH TORPEDO BODY



WINTON TORPEDO AS A TWO-PASSENGER ROADSTER

As Noted in the Garden Show

Rear Axle Designs



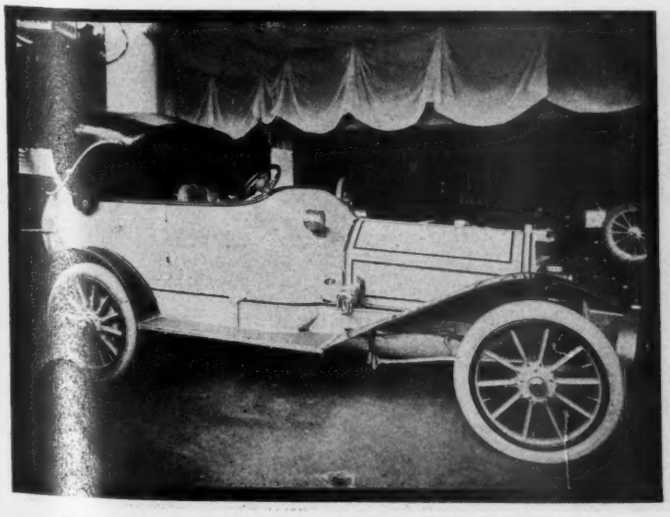
FOUR-DOORED PACKARD LIMOUSINE, ONE OF THE FEATURES

increased as the square, as compared with that of the clutch for transmitting power. Brakes were considered ample by many 3 or 4 years ago, although at that time they were puny affairs when contrasted with those foreign designers had a habit of specifying. Ever since then brake sizes as specified by American designers have been on the increase and that is the first thing that strikes the observer who takes occasion to note this essential on the cars now gathered in the Garden.

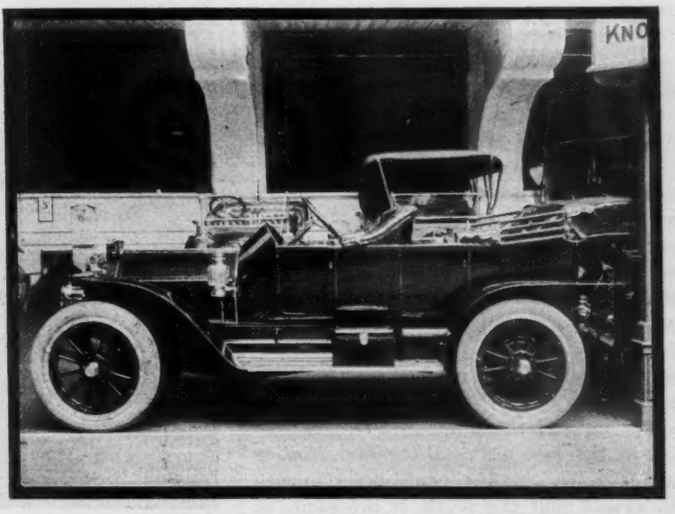
A few years ago, very few brake drums exceeded 12 inches in diameter and in numerous cases they were not guilty of being more than an inch wide. But such brakes would surely not serve, the experienced driver will at once be led to remark. They did after a fashion, simply because they were never put to a real test. So long as they were only employed for the stops occasioned by ordinary city driving, with an infrequent tour that confined itself to level districts, they were never called upon to meet the conditions that foreign designers had had to contend with from a very early date—the necessity of descending grades several miles in length. And grades of a nature that frequently called for the use of both brakes simultaneously. The revolution that has since been brought about in American standards of brake design would have been in evidence long before now had similar conditions prevailed. The Glidden tour that first led the contestants over the Blue Ridge mountains in Pennsylvania was the primary cause of revealing the startling weakness of the American car in this respect. Many were the penalties imposed for no other reason than that of burnt-out brake linings, which even the most careful nursing and alternation from one brake to the other did not suffice to prevent. Not a few of the cars at the show of the following January showed the effect of the

SEATS IN P & S TORPEDO

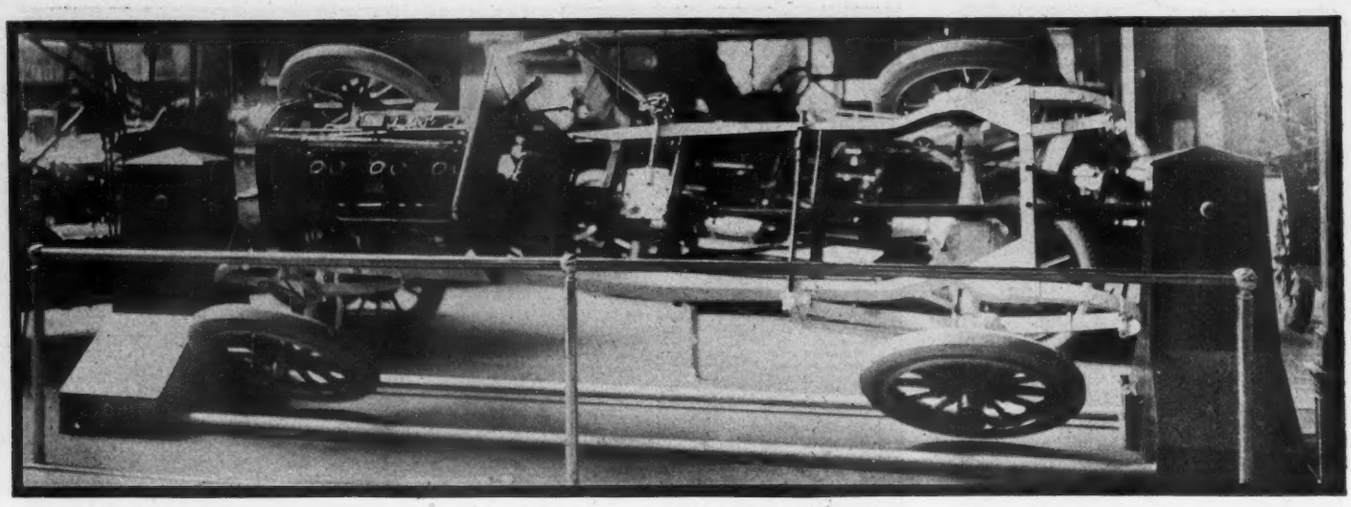
lesson. It has been heeded in greater and greater degree ever since then, until now it is a common thing to find brake drums of 14 inches in diameter by 2 inches faces, while even 16 inches is not a rarity by any means. Just figure for a moment the increase in area involved in jumping from 12 by 1 to 14 by 2—the former means approximately 38 square inches of braking area to each drum, the latter, 88 square



PALMER & SINGER WITH A FOUR-PASSENGER TORPEDO BODY



KNOX WITH A TORPEDO TYPE OF BODY



THOMAS COMPANY SHOWS REVOLVING CHASSIS, PERMITTING OF INSPECTION OF DETAILS

inches, which more than doubles the area.

Few essentials of the car have really settled closer to a standard design than this. Starting with the liberal dimensions already dwelt upon, it will be found that the day of the car that was under-equipped in this respect has passed away altogether. It may be a question as to whether the limit has not been slightly exceeded in the other direction. But, to answer this in a Hibernian fashion, it may be asked, Is there a limit in the other direction? Any brake is too powerful for a green driver to bungle with. But can any brake be too powerful for the car? Naturally, nothing whatever is to be gained beyond the point at which the wheels are locked and the whole machine slides at the expense of the tires. Once traction is lost in this manner, the efficiency of the brakes is greatly reduced. So why have a brake that is more than capable of locking the wheels?

One reason is that an adequate factor of safety must be allowed in every case, as the brake that will slip the wheels with comparatively slight pressure on the braking lever, when the car is new, will not always be in that condition. It must be capable of rendering effective service under conditions far less favorable. But there is another and far more important reason. The sole function of the brakes is not merely to bring the car to an emergency stop, such as would be implied by the ability to lock the wheels. They must also be capable of retarding it for continued periods, such as in descending a mountain where the grades are frequently so severe that a car's entire reserve braking power is frequently called upon to prevent it from running away. This involves the generation of a great deal of heat and unless this can be disposed of almost as rapidly as it is produced, a temperature will shortly be reached at which the brakes lose their effectiveness—the lining burns out and the brake becomes useless. Or, in the case of metal-to-metal friction surfaces, the metal is burned away to such an extent that the result is the same, or worse still, to employ another Hibernianism, the metal surfaces freeze together through the extreme heat and the wheel locks, beyond the control of the driver.

The Pierce-Arrow Brakes

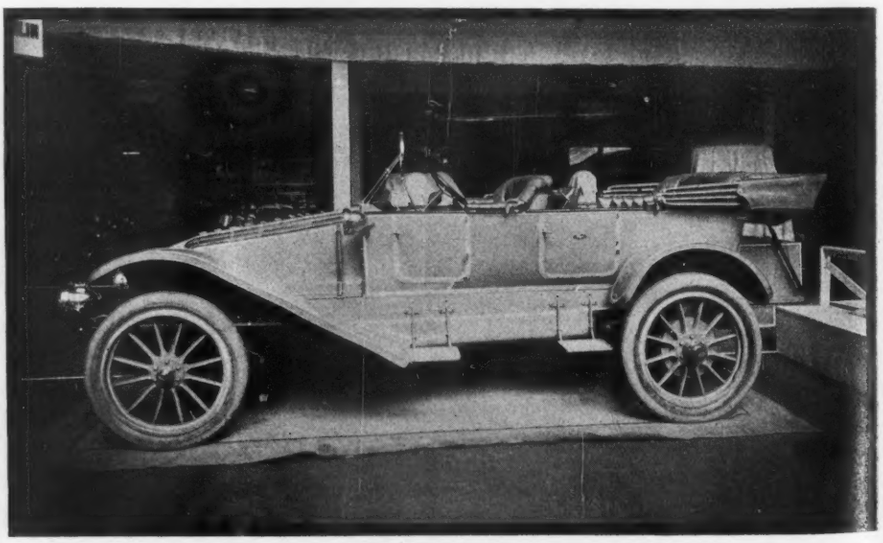
Hence, ample braking surface is required beyond that necessary to bring the car to a stop under normal conditions, in order to provide for radiation. A clever instance of a method of increasing this is to be found on the Pierce-Arrow cars. Instead of making the brake shoe of sufficient thickness to bear the entire stresses of braking, the shoe itself is of comparatively light metal, backed by a piece of heavy steel of rail section. The thin shoe will naturally radiate heat from its friction lining very much more rapidly than a heavier sheet of metal, and the fact that the pull comes directly upon the heavy rib to which it is attached, relieves it of a very large percentage of the actual work of braking, its chief function being merely to serve as a carrier for the friction material attached thereto.

The great strides that have been made in the manufacture of brake linings have been responsible for the discarding to a very large extent of the employment of metal-to-metal contact for this purpose. though some of the best known cars, such as the Locomobile and the Royal Tourist, still employ bronze to steel.

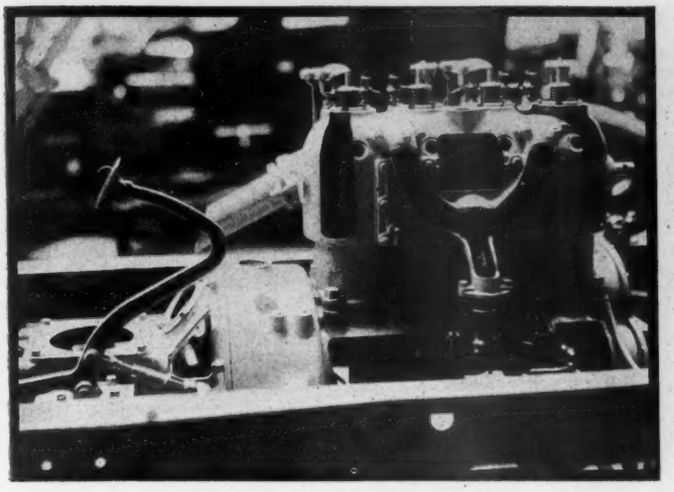
Both of these cars are examples of an advanced type of brake design, which has as yet found comparatively few followers. Instead of employing the customary type of contracting brakes for the emergency service on the outside face of a drum, and an expanding type on the inside face of the same drum, as is the case on probably more than 95 per cent of all the cars now made in this country, both brakes are of the expanding type. They are located within the housing, where they are fully protected from dirt and yet are quite as accessible for adjustment as the others. In the case of the Royal, the adjustment is ingeniously provided for through the hub of the wheel. On both this car and the Locomobile heavy bronze shoes are expanded against the inner face of the drum by means of large cams of special construction.

The Conventional American Brake

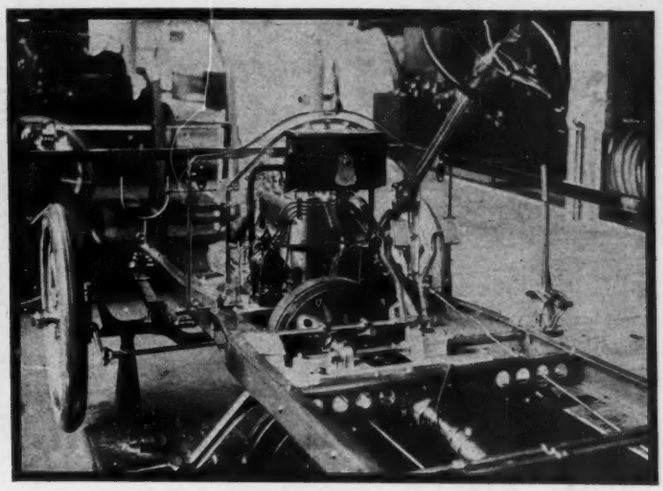
With the exception of a comparatively few instances of this nature, in which



FRANKLIN DISPLAYS A UNIQUE CAR WITH TORPEDO BODY



CHALMERS-DETROIT WAY OF SHOWING MOTOR



CHASSIS OF HUDSON TOURING CAR IS SHOWN

category may probably be mentioned the use of water-cooling in one or two cases, practically all American cars follow about the same standard of brake equipment, particularly where the actual brake drums and shoes themselves are concerned. These take the form of pressed sheet steel drums of liberal section of metal and diameter, as well as face, against the inner circumference of which one shoe is designed to press, and a second shoe, almost invariably the emergency brake, contracts against the outer face of the same drum. Departures from this are to be found in the case of the Chalmers 30, with its service brake of the transmission type on the propeller shaft, and on the Matheson chain-driven car and the Apperson Jack Rabbit, both of which follow the practice that developed the chain-driven car—that of placing the brakes on the countershaft, in the form of two pulleys, against the faces of which the brake shoes contract. Where a brake at any point on the transmission is employed, it is practically always the service or running brake, the emergency brake always being placed on the rear wheels.

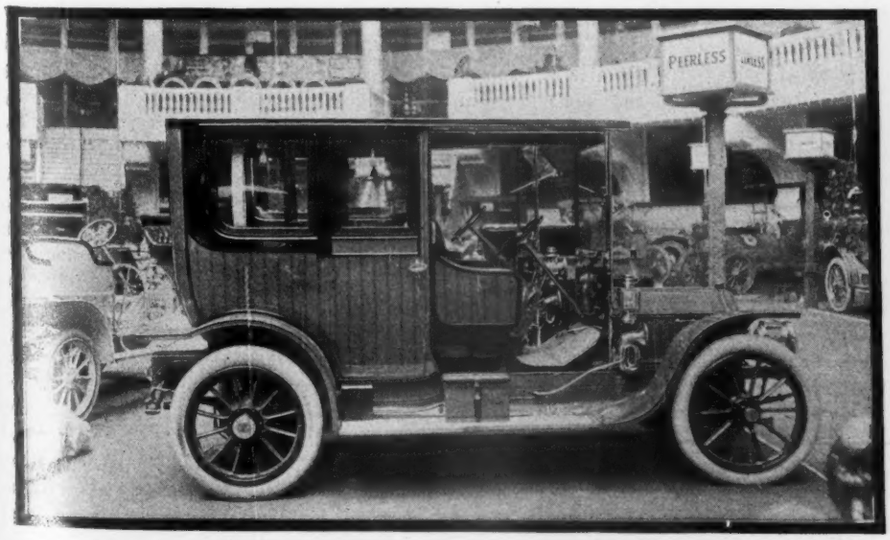
Prominent among the cars that may be said to follow what is now regarded as standard practice in brake design, simply through force of numbers retaining it, are the Packard, Palmer & Singer, Pierce-Arrow, Lozier, Selden, Oldsmobile, Alco, White, Hudson, Stevens-Duryea, Autocar, Columbia, Winton, Studebaker, Haynes, E-M-F and Elmore. The Franklin again is an exception in that it employs a powerful transmission band brake for ordinary service, and the emergency is on the rear wheels. Standard practice is followed on the Peerless, Pope-Hartford, Buick, Stearns, Knox, Marion, Mercer and others. In these numerous instances the external contracting band and the internal expanding band are not alone to be found acting on the opposite faces of the circumference of the same drum, but in almost every instance an asbestos facing material is employed. It is not to be inferred from this that there is little or no difference in the actual brakes themselves. Apart from differences of dimension there are many of design, these chiefly taking the form of improved arrangement to permit of accessibility for adjustment as well as to enable the latter to be made by hand without the aid of tools. This is likewise the case where provision for equalizing the stress on the two drums is concerned, the method of equalizing the braking pull assuming a variety of forms.

Equalizing the Braking

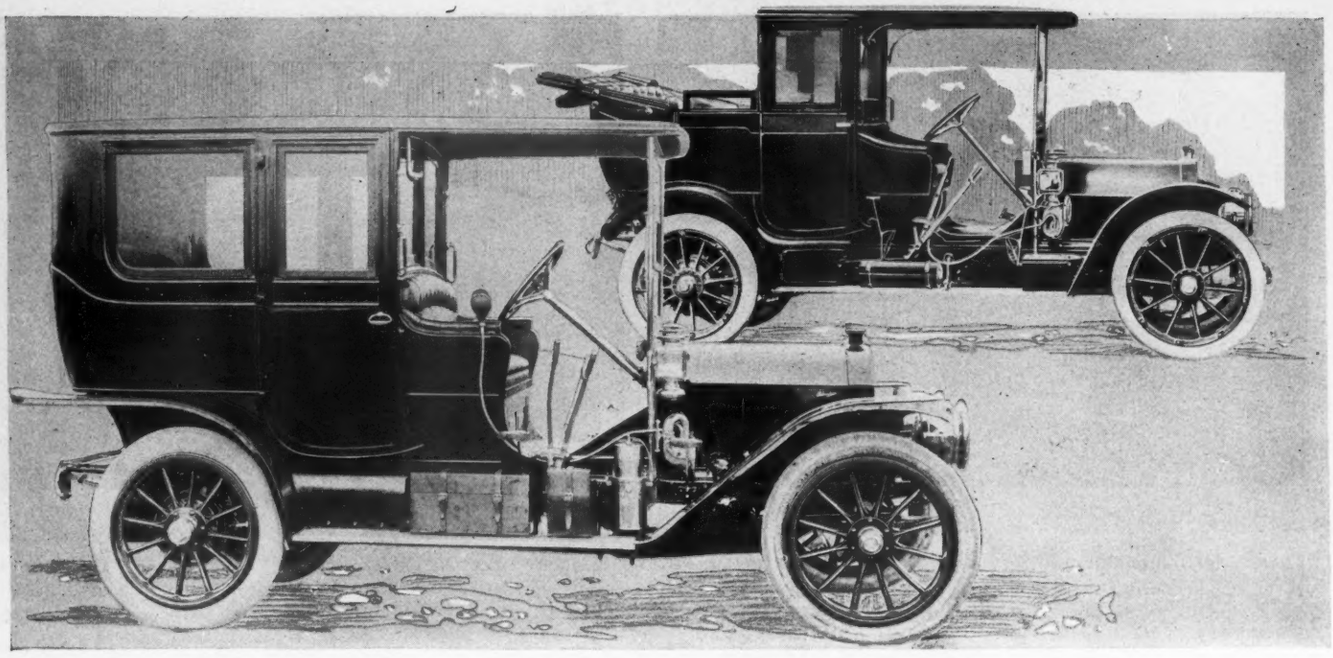
In principle, of course, all are the same—that of distributing the pull at a single point over two points by means of a transverse member as an intermediary. But this member differs radically—likewise its placing and the manner in which it effects its object. For instance, on the Lozier, Pierce-Arrow, Matheson and one or two others, the equalizers take the form of flat bars extending transversely across the entire width of the chassis and sliding in slots in the frame. On the Pierce-Arrow the inertia of these bars is reduced by drilling them to lessen the weight, and on the Lozier they are made of light sheet steel, bent over upon itself, thus giving not alone the desired thickness, but also more than the necessary strength. Next to the flat bar type, the concentric tubes, or rod and tube, are to be found. In fact, this is the most numerous type, though here again it will be found to differ in detail on different cars. For instance, on the Stevens-Duryea an ingenious yoke arrangement makes possible the working of these concentric members and their attached brakes without interference.

Location of Equalizer Rods

As a rule, the equalizer rods, whether of one type or another, extend clear across, though there are not a few exceptions to this as well, the Stevens-Duryea being a notable instance. It is also noticeable that as a general rule the equalizer bar is placed halfway the length of the chassis from the brakes, instances of where this is not followed being found in the Matheson chain-driven car, where the transverse tube which acts as the support for the pedal also serves as an equalizer, and in the Flanders 20, in which the short equalizer bars are very close to the operating pedal and lever. The Mercer affords another example on which short in-



PEERLESS HAS A TASTY TOWN CAR THAT ATTRACTS ATTENTION



STEARNS LIMOUSINE IN UPPER CORNER AND A COLUMBIA IN FOREGROUND

terconnecting equalizer bars are employed, though in this case placed in the usual position well to the rear. On the Alco the transverse equalizer tubes are right at the brake drums themselves, and on this car as well as the Peirce the stress of braking is borne to the greatest extent on a substantial steel drop-forging, which carries the outer brake shoe and the device for operating the inner band. In the case of the Locomobile this good feature is carried out to its legitimate end by extending this drop-forging and making a radius rod of it, so that every part of the braking equipment is not alone solidly supported, but the entire braking strain is transmitted directly to the frame of the car, which is best designed to take it. On the Palmer & Singer the brake levers are carried on substantial brackets fastened to the rear axle and extending backward, so as to give a direct pull on the brakes themselves. This makes all adjustments very accessible. The brakes of the Columbia are unique in that totally different surfaces are provided for the service and emergency brakes. In other words, an air-cooling effect is provided for by making the drum with two concentric faces, against each of which a different brake bears. An instance of the ease with which any slack in the brake bands may be taken up is to be found on the White, a single large thumbscrew, normally locked in position, being the only adjustment necessary. This, or its equivalent, is now the rule on the majority of cars, though a few still adhere to old-time standards in which the operation of making brake adjustments is conducive to profane language and emphatic criticisms.

Cork Used in Brakes

In view of the success they have achieved wherever used on clutches, it was to have been anticipated that cork inserts would have proved a factor of greater influence in the brake design situation by now. Experience on the Premier and other cars on which they have been employed has amply demonstrated that they are quite as effective for this service as they are for the clutch, and the possibility of running brakes of this type in oil makes their capacity for absorbing heat much greater than that of a dry-bake—in fact, the most strenuous tests showed them to be practically indestructible. Before summing up, another factor must be mentioned—that of compounding the leverage of the braking system, and more particularly the pedal brake, in order to reduce the effort necessary to apply it. With such powerful brakes as are now employed this makes the care necessary not to slip the wheels greater than ever, as the pressure on the pedal now required to exert a heavy braking stress is slight indeed.

To sum up, the great increase in dimensions alone would appear to have been a tendency which has now about reached its culmination. The practice of enclosing both brakes inside the same hub and making them of the same type is a trend adopted by one or two prominent designers and which will doubtless be followed by others. Friction materials are almost universal, though the metal-to-metal contact has not disappeared. This is also true of the transmission brake, there still being a sufficient number of examples of this type extant to show that faith in it has not been misplaced. Nevertheless, it is greatly in the minority, and it may safely be said that the rear wheel drums with an internal expanding and external contracting band, with the stress equalized by transverse concentric tubes, represent a close approach to standard practice.

Five years ago it was the almost general consensus of opinion that the conical, leather-faced clutch was destined to disappear within a comparatively short time. Had the results obtained in its use not improved over what they had been, there is no doubt that this might have been true by now, but the fact that sixteen of the thirty-six different makes of pleasure cars shown in the garden still employ the cone clutch, shows that the better alternative prevailed. The use of cork inserts has been responsible for this in large measure, and improvement of design has done the rest. It was once said by a prominent engineer in the course of a paper on the subject that the reason cone clutches were such a source of trouble on the motor car was because they had been designed entirely according to hit-or-miss methods, because there was no data extant. Unfortunately for the motor car engineer, the data was in existence, but he had not realized it, practically the identical type of clutch employed on the car having been used for years on rapid coal elevating machinery. The fact that slightly more than 40 per cent of the cars now shown in the garden are equipped with the cone clutch, taken in connection with the further fact that some of the most successful cars in the world are included, and they have never used any other type since their inception, would certainly appear to warrant the statement that this type will doubtless outlive many others in the end. In very few cases is it anything but the plain aluminum spider with its leather facing, though the employment of springs of one kind or another under the leather to prevent sudden gripping, as well as to insure uniform hold, is now almost universal. The new Flanders 20 is somewhat of an exception, in that it employs the reverse cone type. Some prominent advocates of the cone type that have never departed from it as a standard are the Pierce-Arrow,

Pope-Hartford, Locomobile, Columbia, Cadillac, Corbin, Buick, Studebaker, Garford, Selden and a few others.

The Multiple-Disk Type

Next in importance, so far as their numerical strength is concerned, are those cars employing the multiple-disk type. They represent but slightly more than 33⅓ per cent, as compared with better than 40 per cent for the conical type. Though apparently destined to supplant the cone a few years ago, at which time the prospect of the very general adoption of the multiple disk seemed imminent, it does not appear to have made any great progress during the past year. Eleven makes of cars are represented by the percentage in question, and several of these adhere to the type of clutch using a large number of disks, such as the Winton with sixty-seven, the Matheson with fifty-three, the Marion with thirty-eight and the Stearns with twenty-five disks. Others employing the multi-disk type of clutch are the Alco, the Franklin, Palmer & Singer, Simplex, Lozier and the Chalmers 30.

From the multiple-disk there was evolved a modification, or it may be that the latter was really a development of what is known as the plate clutch, in which a very small number of large disks, usually three, are employed. The Autocar and the Thomas were early advocates of this type and have always adhered to it, with great success in practice, and the Knox is another. The Stevens-Duryea was a pioneer in the adoption of a clutch which was really a multiple-disk, except that the surfaces were faced with friction material and ran dry. It was accordingly known as a dry-plate clutch. This has recently been adopted by the Packard and the Stearns, the former of which up to this year had employed a band type of clutch. Speaking of band clutches, the Peerless is the sole representative of the expanding band type, which has always proved very successful on this car, but which has seldom been followed in other cases, though there are still some that adhere to the contracting band, notably the Haynes, Elmore and Apperson. With the exception of the transfer of their allegiance to the dry-plate type by the Packard and Stearns designers, it would be difficult to say that there are signs of any decided trend where the matter of clutch design is concerned.

The Cone Type Is Strongest

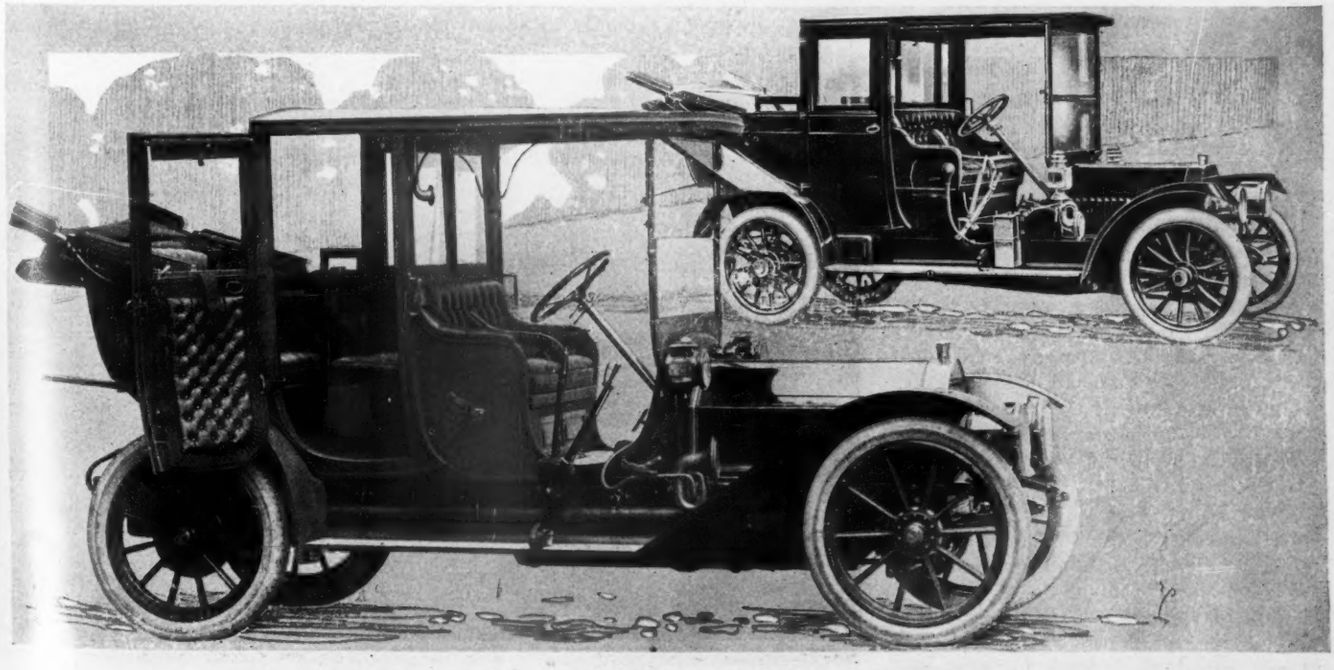
The conical type, instead of disappearing, as was confidently anticipated, is still the strongest numerically. The multiple-disk type is a close second, but does not appear to have made much headway during the past year or two. Except for the instances already made mention of, there appears to have been scarcely any change at all worthy of note, those designers who early adopted a distinctive type belonging to neither of the classes in question, not having seen fit to change to any of those that were heralded as being improvements over anything extant at the time they were first exploited. Having reached a point where the service rendered by each one of the types in question is highly satisfactory in practice, designers are content to let well enough alone, and there would appear to be small prospects of any radical changes being brought about during the coming year.

As in the case of the brakes, an attempt has been made to improve the operation of the clutch, particularly with a view to making it easier for women to drive. To accomplish this the effect of the levers has been compounded so that the clutch of even a high-powered car may now be disengaged with a minimum of effort—so little, in fact, as to lead one who had never operated anything but an old type, with its stiff spring exerting an almost direct pull, to think that something had broken loose on the new one and it was not working at all. This increase in the efficiency of the leverage of the clutch-operating mechanism has been made necessary in many cases by the increase in the spring pressures employed to seat the clutches. With a multiple-disk type of such small members as it has been customary to employ, a much higher spring pressure is naturally necessary to enable the clutch to carry the load for which it is designed, though the employment of such small disks practically eliminates the factor of inertia and prevents spinning entirely, thus facilitating the shifting of the gears. In one or two cases where the clutch is of the conical type, and accordingly of more or less liberal diameter, a clutch break is employed, which serves the same end.

Little Change in Rear Axles

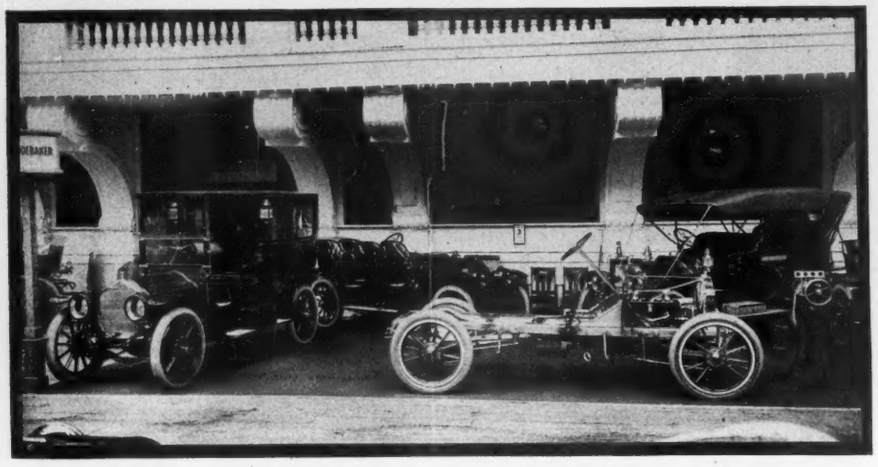
What is true of the situation where the clutch is concerned applies to an equal extent to current practice in rear axle design. Last year brought forth one or two examples that were not only departures from previous practice, but also embodied excellent engineering ideas. Their influence is to be seen in the modification that has resulted in one or two instances, but as a whole there has been little or no change worthy of comment. The Stearns axle was undoubtedly one of the best that 1908 was sponsor for and its success is to be noted in the fact that it has not undergone any change in the interim. In a somewhat different form, a similar principle, that of carrying the

(Continued to page 42.)



PIERCE-ARROW LANDAULET IN FOREGROUND; LOCOMOBILE IN UPPER CORNER

Features of the Accessory



MANY TYPES SHOWN BY THE STUDEBAKERS

THE following descriptions relate to new articles or improvements in old ones that are exhibited at the Madison Square garden show by companies that did not display at the Grand Central palace show and whose products were not mentioned in the December 30 issue of Motor Age, the A. M. C. M. A. number.

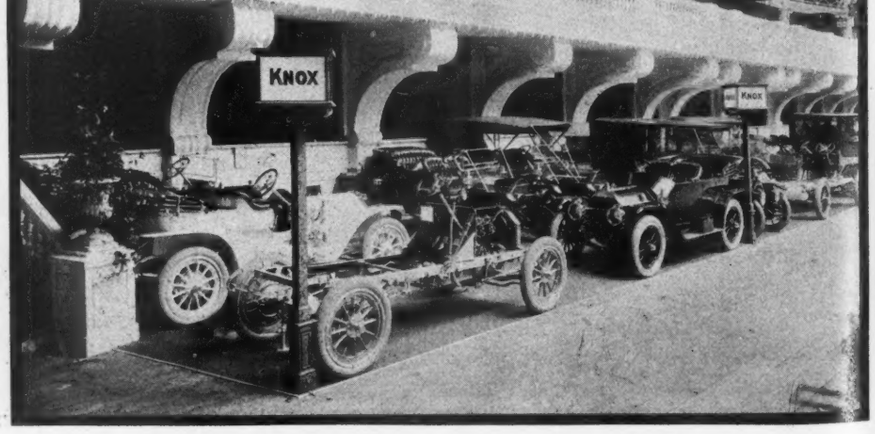
WINDSHIELDS

E. M. Benford Co.—A new friction windshield is being offered as the most prominent article in the Benford line. It is of heavy plate glass bound with polished brass and the hinges have spring latches to hold the upper half of the shield in any one of various positions. These latches are instantly released with the fingers. Besides the windshield the Benford line includes the Monarch magneto plug with an insulation or core twice the thickness of the ordinary mica plug, the No. 30 mica plug, Benford's Monarch mica plug for motor cycles made so that it can be used with the leading motor cycle factory clip connections, Benford's mica Cadillac cores, the Monarch porcelain spark plugs and the Monarch timer for motor cars. The last-named device has roller and contacts made from imported Tungsten steel and a spring plunger fitted in the cover with a binding post and gravity nut, which enables the timer to be adjusted so as to insure perfect and even contacts and regular firing of the engine under all conditions.

Victor Auto Supply Co.—The Vasco windshield has a new feature called the rain gap by which all water dripping from the lower edge of the upper half is thrown forward of the dash, so that it falls outside of the car. The Vasco is a full 29-inch shield that folds in half, yet clears the steering wheel when the upper half is folded back and down. This is accomplished by means of a short arm over the hinge whose forward end is connected with the brace rods so that as the upper half is folded back the center of the shield is drawn forward 2 or 3 inches until the top edge clears the steering wheel, when the windshield again assumes its normal vertical position. The hinges are of the friction type without springs so that the shield can be operated with one hand without stopping the machine or dismounting from the seat. This company also shows its Grindine compound made in coarse and fine grades and put up in collapsible tubes for use in grinding valves, pistons and piston rings, bearings, etc. The abrasive used is one of the electro-chemical products selected for its hardness, sharpness and temper. The compound obviates all the dangers of emery.

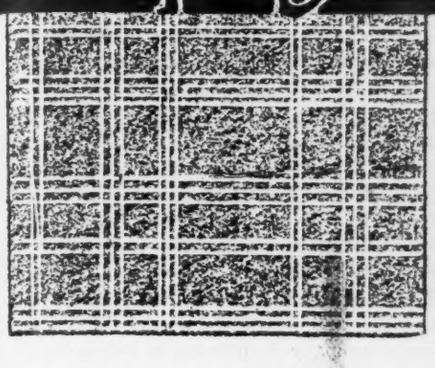
C. A. Mezger—The Mezger clear vision Automatic windshield is a new departure with this manufacturer that derives its descriptive name from the fact that meeting edges of the plate glass halves olng the center line have no binding of any sort, either brass tubing, or wood, giving an unobstructed view. Coiled springs act to hold the upper section in either upright position or folded down as desired. The hinge and locking device are automatic in action so that the shield can be operated by one hand.

Newark Rivet Works—In the same stand with C. A. Mezger, Inc., this company shows its new friction windshield which has one of the simplest forms of hinges used for this purpose. There are no springs nor thumb nuts, depending on friction alone for holding in position. This shield is made in touring car and roadster types. The former stands vertically from the dash and the latter has a backward sloping lower section to correspond with the sharp rake of the steering column.



KNOX STAND, FEATURED BY A TORPEDO-BODY MODEL

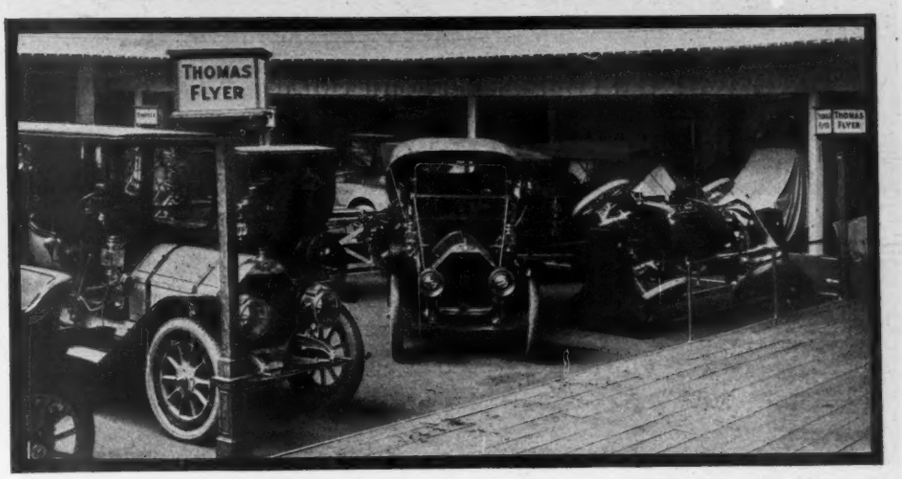
Display Made in the Garden



The shield is of plate glass bound with brass tubing polished.

English & Mersick Co.—Special attention is being called to the new E. & M. Tabor windshield and the Emco radiator, manufactured by this company and added to its very full line of motor car hardware which included various parts in brass and steel for bodies and tops, tire irons, etc.

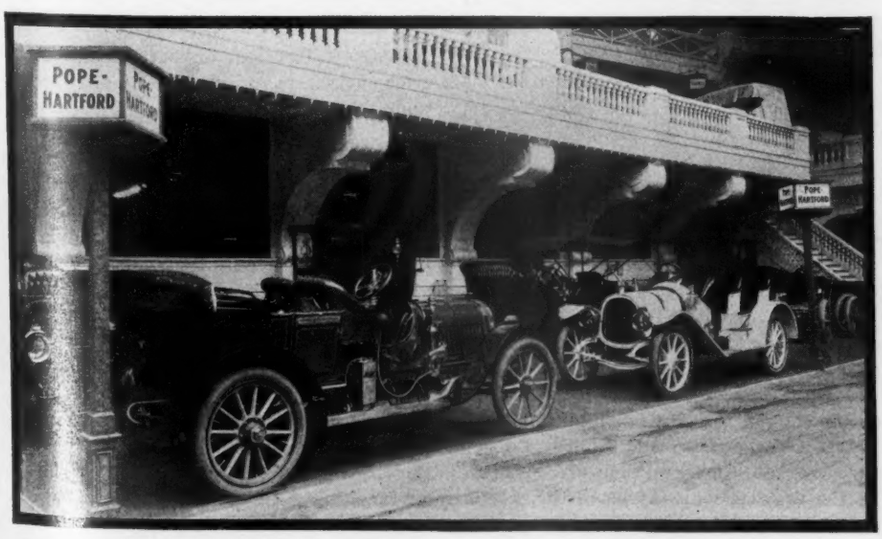
National Auto Top Co.—Recognizing the disadvantages of the ordinary windshield when driving in a storm, the National people have brought out a new windshield with the rain vision attachment by means of which the lower part of the upper section can be thrown forward, thus affording a clear view ahead and at the same time giving protection from the rain. Besides the windshield it is showing a half-Duquesne runabout top so constructed that the front bow is practically eliminated. It is attached to the second bow near the top thereof. This gives easy access to the seats and affords additional room for operating the steering wheel and levers. A regular four-bow touring top is also shown by this top concern.



REVOLVING CHASSIS ATTRACTION AT THOMAS BOOTH

Rands Mfg. Co.—Special prominence is given to the new No. 10 disk automatic windshield recently brought out by the Rands company. The special feature of this resides in the hinge, the meeting disks of which are held firmly against each other by means of a stiff coil spring surrounding the disk bolt. A corrugation in the outer face of the inner disk engages with any one of three radial grooves in the outer disk and holds the upper section of the shield in vertical, semi-vertical or folded down position. The operation is entirely automatic so that the shield can be changed from one position to the other by one hand without stopping the car.

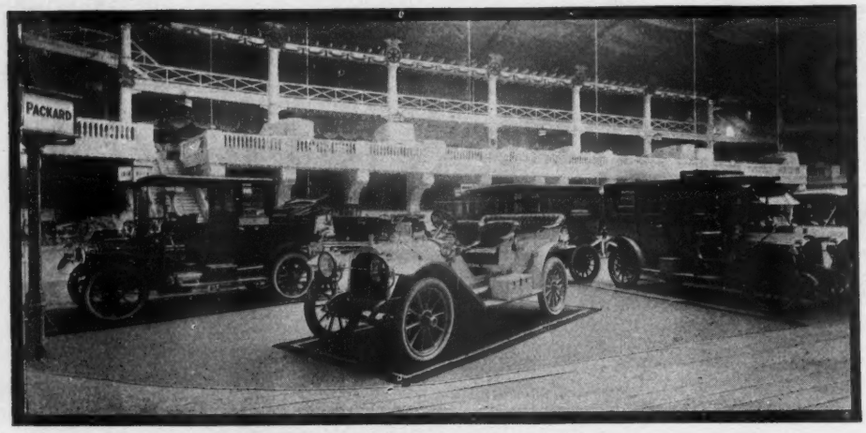
Vanguard Mfg. Co.—The new Vanguard Zig-Zag windshield embodies a new and novel idea. The lower half or offset section is made of Shelby seamless brass tubing polished and in place of the wood panels that in time are likely to look shabby or a glass that radiates a great amount of heat, is used a waterproof black silk Mohair or pantasote apron to match the top as desired. This buttons in place on the brass edges and is removable. The upper half or section works automatically on friction joints and can be adjusted to any desired position by a slight pull. It is of plate glass set in brass tubing. The total weight of this shield is only 23 pounds. The company also shows its Bolt Lock windshield provided with a positive locking joint. The Vanguard line includes the Vanguard spark plug and other motor car accessories.



WHITE FOUR-PASSENGER ROADSTER A FEATURE IN POPE-HARTFORD EXHIBIT

LUBRICATORS

Lavigne Mfg. Co.—The Lavigne mechanical oiler with micrometer adjustment which is already well known has now been brought out in sight-feed model. A semi-cylindrical celluloid transparent hood covers the drip cups on top of the reservoir cover, permitting the driver of the car to see for himself the flow of the oil to different feeds. There are no cams, check valves or springs of any kind, a double set of plungers and positive valves being operated positively by a worm and worm-gear. The Lavigne company reports having just received a first order for 7,000 of the new sight-feed model from the Mitchell Motor Car Co. for its 1910 cars. In addition to the motor car size, the company has just brought out, but is not yet exhibiting, a new sight-feed lubricator for motor cycles operating on the same principles. It is a novel and most ingenious device consisting practically of one section of the larger oiler with a single



STAND WHERE PACKARD DISPLAYS ITS NEW MODELS

VIEW TAKING IN THE DISPLAY OF THE CHALMERS COMPANY

feed. It was designed especially for the Excelsior Mfg. Co., which ordered 7,000 for the present season. The pump reservoir is made integral with the engine crankcase, a special casting being required for the purpose. The plungers are driven direct from the crankshaft, the ratio of reduction being 40 to 1, by worm and gear. The pump works in an oil bath. The reservoir, made circular to balance the housing for the magneto driving gear, holds enough oil for about 50 miles' running, but is connected by a lead with the main oil tank above. This pump, exclusive of the main reservoir, weighs only ¾ pound.

Seamless Rubber Co.—The Bragg stitched tire, as exhibited, presents a new idea in tire construction. This is the stitching together of the several layers of fabric in the carcass of the tire to prevent fabric separation and the resultant blow-out. The method of construction is the result of 3 years of experimenting and is patented. The makers guarantee non-separation throughout the life of the shoe. In other respects the Bragg tire does not differ especially from other makes, except that a specially-compounded tough tread is used that contributes to increased life of the tire. In addition to the tire the company is showing a line of rubber sundries for the motor car trade, including lamp connections in red tubing in different lengths, molded spring bumpers, pure gum repair patches, gas bags, generator tubing, inside blow-out patches, outside tire sleeves, rubber driving gloves lined with cloth, vulcanizing cement and repair stocks and fabrics.

Hancock Mfg. Co.—Demonstrations of the Hancock compound tire pump are being made to show the simplicity of the pump and the ease with which the leathers can be renewed. Such renewal is all that is required to keep any good tire pump in first-class condition, but it is essential that the change of leathers can be made without difficulty. The company is exhibiting also a number of its stock oilers, such as are supplied to various prominent motor car concerns, and a small line of oil guns made of seamless brass tube throughout and finished in the best possible manner.

Motz Clincher Tire and Rubber Co.—A new detachable truck tire is being shown for the first time by this company. It is mounted in a rim having a detachable side flange set in a groove and held in place by a bolt. The tire can be removed or applied with ordinary tools. In addition, the company is showing its new improved special electric tire as well as its regular clincher type cushion tire for use on pleasure vehicles.

Stein Double Cushion Tire Co.—The new Laplock pneumatic tire is unique in having overlapping inner bead ends that form a solid wall between the rim and inner tube and protect the latter from possible injury. The surface presented to the inner tube is flush and smooth all the way around so that it is impossible for the tube to get caught between the bead ends and pinched. There are no bolts or lugs that can chafe the tube, and dust and moisture cannot enter between the rim and casing or between the casing and inner tube. Besides furnishing the Laplock base to fit all clincher and quick detachable rims, the Stein company is offering a special type of Laplock base for Dunlop rims. The Stein tires are furnished with extra heavy wrapped tread, and a new shoe with an anti-skid tread has just been brought out.

Federal Rubber Co.—Federal pneumatic tires for motor cars are exhibited for the first time at the New York show. The cross country type anti-skid tire is made very striking in appearance by a tread having three circumferential rows of large raised Maltese crosses on it moulded in the rubber. These give a grip on the road or street surface that counteracts any skidding tendency. Federal tires are also made in wrapped tread for regular clincher and quick detachable rims. The slogan of the makers is "The tire that won't blow out." The cross country type is intended especially for heavy limousines and is claimed to be the heaviest and strongest pneumatic tire made. Inner tubes and repair materials are also made and shown. A useful idea in connection with the tire repair kit is the numbering of all the patches, etc., and printing of directions on the lid of the pasteboard box telling just how long and under what steam pressure repairs with each should be vulcanized.

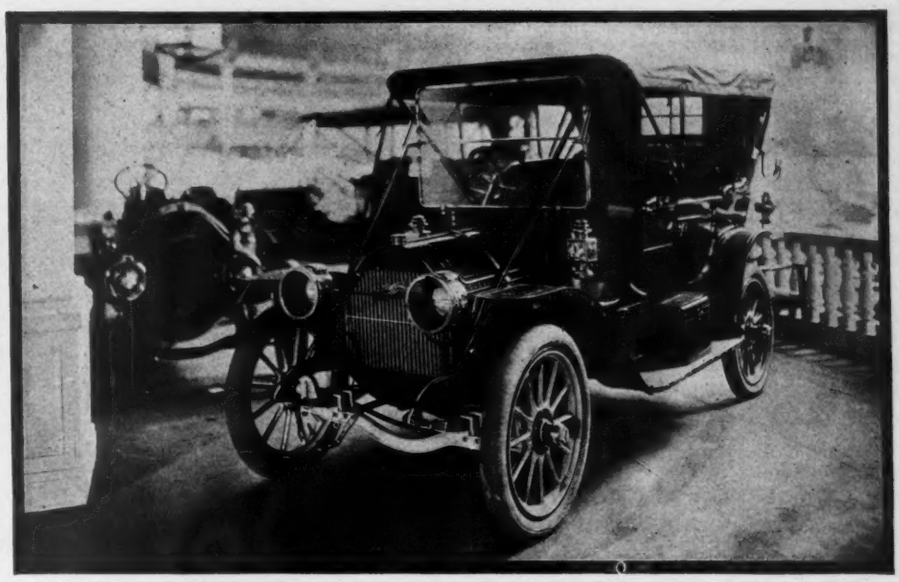
McGraw Tire and Rubber Co.—Imperial pneumatic tires for clincher rims are made and shown in three different styles of tread, all of unusual thickness and having an unusual amount of rubber at the point where most wear comes. The tread rubber in all is of a pink shade, indicating the use of Para gum. The crown tread is of ovate cross section with a pointed bead along the center line; the heavy flat tread is molded high but made flat along the extreme tread and is especially recommended for mountainous country and very rough roads; the non-skid fabric tread is a new departure in tire-making. The form is similar to the flat tread tire but the tread is built up with layer upon layer of fabric and rubber all the way out to the extreme surface, on which the weave of cotton can be seen. The extra-wide

breaker strips are inserted at different depths to protect the underlying rubber. This tread presents an almost impenetrable front to accidents, wear and puncture. Aside from the novel forms of tread, the Imperial tires are made from Sea Island cotton superimpregnated with rubber by a calendaring process repeated three times under terrific pressure. Imperial tires are sold in New York by the Import-Export Motor Co. In the stand of the McGraw Tire and Rubber Co. Mr. Bushey, of the company, is demonstrating a new demountable rim with the object of interesting some manufacturer. The rim operates on the principle of an expanding brake. Between the felly band and the regular clincher rim, which fits up against a flange on one edge of the band, there is a split band that normally is contracted upon the felly band, permitting the clincher rim to be slipped off or on. At the meeting ends of the split ring there are two cams rotated by a key that expand the ring against the inner face of the clincher rim, holding it securely. To prevent the key from turning when the car is running, it is provided with a small pinion, in the teeth of which engage six teeth formed on the end of a pin set at right angles to the key and radial to the wheel. This pin is spring-actuated and made with a finger ring so that it can be disengaged by a simple pull.

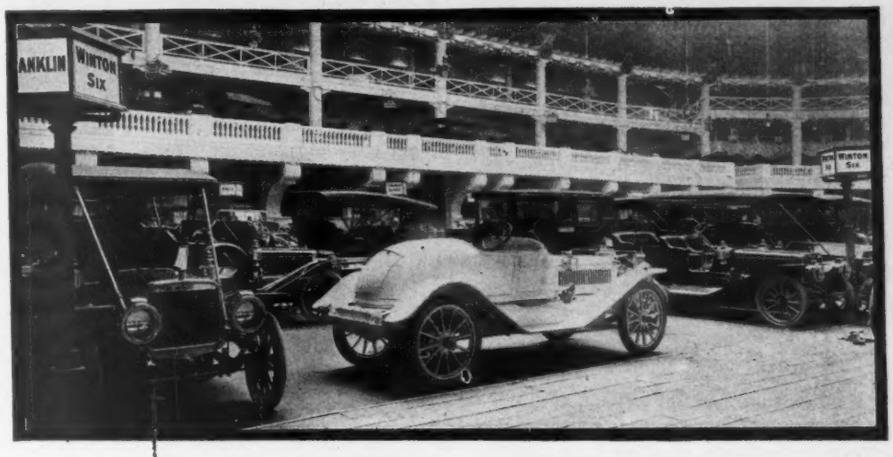
Continental Rubber Works—A line of inner tubes for motor cars, called Continental-Erie and Tribune, are made and shown by this company. The former are made of Para rubber, three distinct layers being used in the smaller sizes and four in the 3½-inch and larger. The layers are vulcanized together, making a thick tough tube, which is especially reinforced at the valve base. The tubes are made in annular form without seam or splice. The Tribune tubes are cheaper and thinner than the others but are of about the same thickness as standard inner tubes in the market. The company also makes and shows motor cycle tires complete, with non-skid treads in raised diamond and rubber stud or Bailey pattern. Bicycle tires in various styles and motor car tire specialties, such as rubber patches, outside repair sleeves, lamp connections, pump hose and pump connections complete the Continental-Erie line.

RADIATORS

A-Z Co.—The type of square tube radiator made by this company is made to be used for either thermo-syphon or pump circulation. All of the water channels are in direct lines that allow an unobstructed flow and that will not become clogged with rust or sediment. A number of these radiators have been made to be used as dashboard radiators with thermo-syphon circulation, as in the popular Renault design, and have given satisfaction. Besides the A-Z radiator this exhibitor shows its familiar line of sheet metal car parts, including hoods, fenders, tanks, bent piping and tubing, fans, mufflers, etc.



APPERSON COMPANY HOLDS FORTH IN THE BALCONY



WINTON TORPEDO PROMINENT IN CLEVELAND CONCERN'S BOOTH

Livingston Radiator and Mfg. Co.—The Livingston radiators, formerly made by the Livingston Radiator Co., are now being manufactured and sold by this company, the license heretofore held by the Livingston Radiator Co. having expired. The El Arco Radiator Co., successor to the Livingston Radiator Co., will manufacture and sell the El Arco radiators. Although having the exterior appearance of a square-tube radiator, the Livingston is made up of a series of flat vertical tubes with square corrugations and with swaged edges to form thin water channels. Seams are lapped all along both edges to obviate danger of seams opening. During the past year there has been added to the line an aeroplane model of radiator of rectangular pattern that is extremely light, very strong and which offers slight resistance to the air yet has high efficiency.

TOOLS

Cook's Standard Tool Co.—Standard motor car jacks in three sizes—No. 1, No. 2 and the Baby Standard—are shown. These jacks are of the well-known pattern, having a lifting and lowering mechanism working only on the down stroke. The mechanism is automatic and is controlled by the small lever at the side of the frame. The rack bar is of steel.

Duff Mfg. Co.—Heretofore this company has shown only its Barrett motor car jacks at the motor car shows, although it was a large manufacturer of railroad and factory jacks before entering the motor car field. Now it is going after the factory trade as well as that of the sundries dealer and individual. It exhibits a 20-ton hydraulic jack and also mechanically operated jacks in the well-known Barrett design, but of giant size, designed for loads of 12, 10, 5, 2½, 1 and ¾ tons respectively.

Wright Wrench Mfg. Co.—The Wright monkey wrench exhibited is a radical departure from the usual wrench construction. It is made without a screw and is adjusted to fit the nut by means of a slight pressure on the jaw with the thumb of the hand holding the wrench, so that it requires only one free hand to operate it. The wrench is made of drop-forged steel carbonized and mottled and consists of

only six parts: the bar that forms the handle and head, the jaw, the pawl set into the jaw, the rack that is set into the bar and held in place by set-screw, and the spring. The jaw slides up and down on the bar after being released by a slight pressure of the thumb on the back of the jaw. When the jaw is adjusted to fit the nut the pressure is removed and the pawl immediately engages the rack, holding the jaw firmly in position. Any play of the jaw after being once set is prevented by a set of ratchet-like teeth in the pawl and rack that engage each other. The manufacturers have brought out for the present season a specially designed motor wrench having the foregoing adjustable feature, but made with a long thin head to get into narrow and inaccessible places.

LAMPS

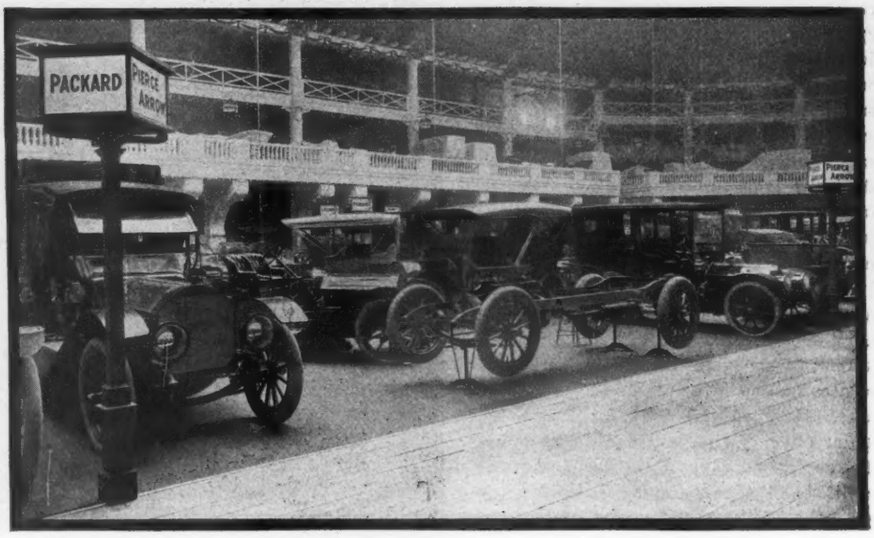
C. T. Ham Mfg. Co.—The well-known line of Ham side and tail lamps has had several new styles added for the 1910 season. These are combination oil and electric and oil and acetylene lamps in which all of the burners are interchangeable. There are also new models equipped to burn both oil and electricity as desired without removing either burner, a Tungsten globe being socketed in the rear of the lamp back of the oil burner. There are several new varieties of finishes, the side and tail oil lights which heretofore have been finished in all black now being made with polished brass tops, backs and door flanges.

C. M. Hall Lamp Co.—One of the real novelties in the show is this company's new combination headlight called the New Yorker, which complies with the traffic regulations enabling the dazzling acetylene light to be turned off and electric light used instead. This is accomplished by means of a special combination burner having an electric bulb socket on one arm and a fishtail burner on another, the arms being set at an angle to each other on a hinged base. By means of a set-screw just below the base of the lamp either burner can be set and locked in a vertical position in the focus of the reflector. The Hall line also includes combination gas and electric side lamps in which a permanent incandescent bulb socket is permanently fixed back of the oil burner. This company is bringing out, but had not completed in time for exhibition, a new oil lamp for motor trucks and delivery wagons which is made of 20-gage pressed steel and finished in black.

Post & Lester Co.—A new design barrel-shaped lamp with new form of hood has been added to the line of Royal de Luxe motor car lamps which are shown in the acetylene and oil headlight patterns and oil side and tail lamps. The company's Jupiter lamps with lens mirror reflectors are also exhibited.

LUBRICANTS

N. Y. and N. J. Lubricant Co.—The well-known Non-Fluid oils manufactured by this exhibitor for lubrication of every part of the motor car except the cylinders, and the company's Motorol for cylinder lubrication are being marketed now through the United Manufacturers with headquarters in New York and branches in Boston, Philadelphia, Chicago, Cleveland, Detroit and San Francisco. The characteristic feature of Motorol oil is its lasting properties, some of the reports of mileage tests showing exceptional results. At the show a demonstration of the qualities of the K-No. 00 Special Non-Fluid oil is made by means of open gearsets driven by small electric motors, the gearcases being filled with the lubricant. This same form of demonstration will be carried on as a permanent feature of the selling branches.

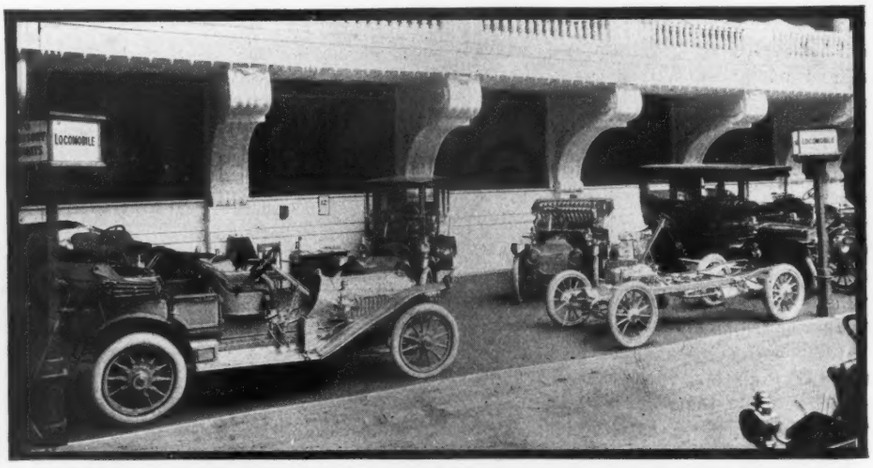


PIERCE-ARROW AND PACKARD ARE NEIGHBORS IN THE GARDEN

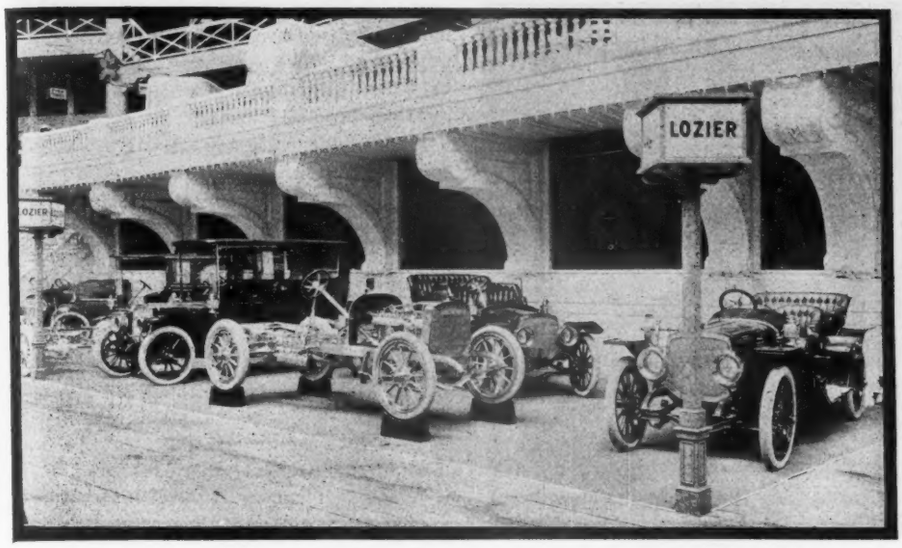
Vacuum Oil Co.—By means of a gasoline engine shown in operation driven by electricity, a demonstration of the use of this company's Mobiloils is made at the show. These cylinder oils are made in five grades, A, B, C, D and E, for use in different types of motors, steam engines for motor cars and transmission and differential gears. The line includes Mobiloil Arctic, for four and six-cylinder vertical engines, which has a zero cold test and will flow in zero weather; light and heavy transmission greases and Mobilubricant for use in grease cups and for packing the steering gears.

A. W. Harris Oil Co.—Although there is no new product in the Harris line of oils, an interesting and educational feature is employed for calling attention to the exhibit. This is in the form of a revolving stand showing a number of reversing signs calling attention to the different uses and qualities of the various grades of Harris oils. Surmounting the signs is a miniature oil derrick indicating the petroleum basis from which these oils are manufactured. The cans in which the products are marketed have a removable screw spout that has been found of great convenience by users.

Valvoline Oil Co.—An ingenious method of showing the varying consistencies of the different grades of Valvoline oils has been put into effect at the show by this company. Five 2-foot glass tubes are mounted in a vertical wood frame and connected with rubber tubes at the base



LOCOMOBILE ONE OF THOSE DISPLAYING A POLISHED CHASSIS



LOZIER HAS ONE OF THE ORIGINAL TORPEDO TYPES

to admit air bubbles which rise to the tops of the tubes at different rates. A gearset in operation with the case half filled with Valvoline gearcase oil of semi-fluid consistency illustrates the effect of the lubricating qualities of this mineral oil.

ELECTRICAL

Apple Electric Co.—The special feature of this company's exhibit is the Apleo electric lighting and ignition system that was first put on the market early last year and which has recently been slightly reduced in retail price. In connection with the system the company also shows its Apleo electric headlights. The lighting and ignition system embraces a 10-ampere Apple dynamo with load regulator and cut-out and an Apple lighting storage battery, both conected to poles of a volt-ammeter. As soon as the dynamo generates sufficient voltage, an automatic cut-out connects the dynamo circuit through the volt-ammeter to the storage battery which accumulates the surplus current and in turn supplies it automatically for either ignition or lighting at times when the dynamo is under sped or at rest and not furnishing the necessary curent. The Apleo lamps have no openings through which dirt can get in to collect on the reflectors and diminish the lighting effect.

Jeffery-Dewitt Co.—Four new spark plugs have been added to the line of Reliance plugs made and marketed by this exhibitor. They are the Reliance Magneto, the J-D Conical, J-D Petticoat and J-D closed end types. All are characteristic and all embody certain similar points in construction. The caps, binding nuts, bushings and method of supoprting the porcelain are the same in all, so that all of the plugs of the group are practically interchangeable. The new plugs are offered as an inexpensive group of high efficiency and are built along the improved lines of the Reliance plugs, but do not have the same electrical features. An improved clip is packed with each plug. The porcelains in all the plugs are made in the company's own pottery and are of a newly-developed composition claimed to be highly heatproof.

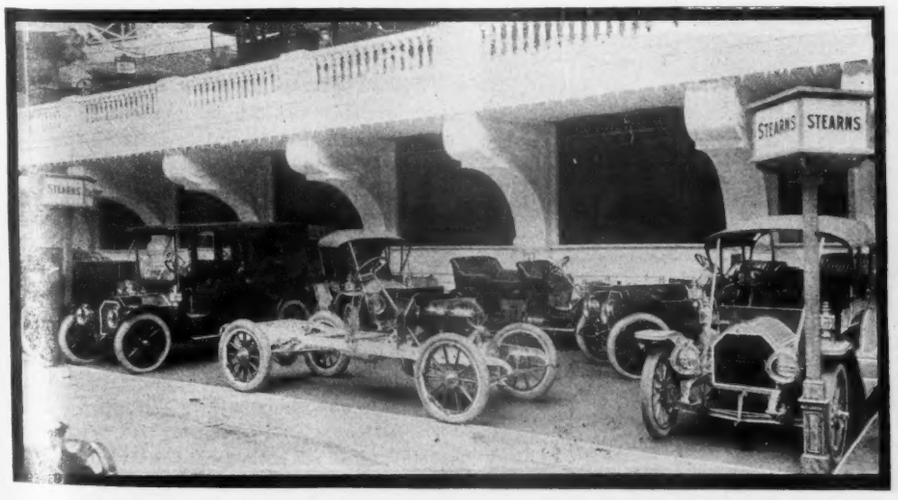
Stackpole Battery Co.—A new article exhibited is a waterproof jacket for dry cells made by a new process of which this company has exclusive control. This is expected to eliminate the great obstacle to securing satisfactory work from dry cells for ignition purposes caused by the fact that an ordinary jacket often becomes damp or wet and short circuits the cell. Besides this new jacket, the Stackpole company exhibits its Autocrat and Wizard dry cells for ignition which have been on the market for more than three years.

Champion Ignition Co.—The 1910 A. C. spark plug is a magneto plug with double electrode made to stand the high heat of the magneto and at the same time designed so that it will throttle an engine down very low. In addition the company is showing its ignition cable. The magneto spark plug has two electrode points projecting from the outer shell to close proximity to the central electrode.

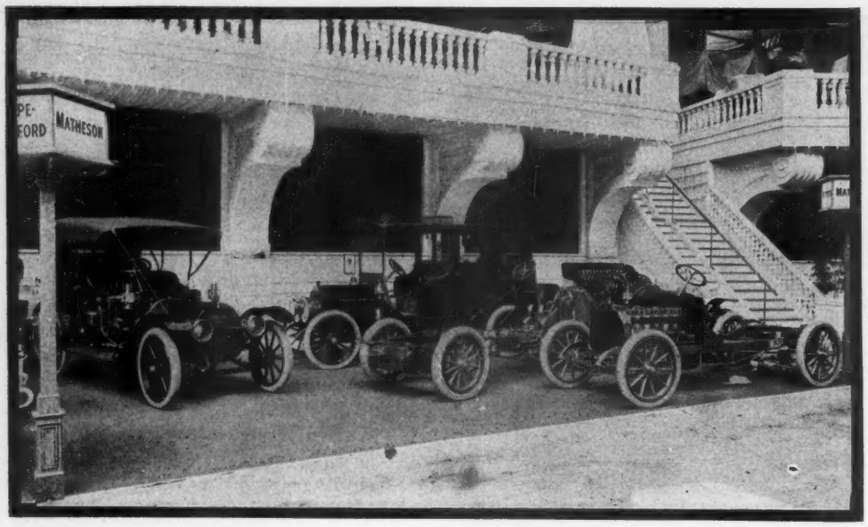
Connecticut Telephone and Electric Co.—Two new models of Connecticut spark coils have been added to this company's line. The type X is smaller than the regular type A coil and lower in price and the new type M V is a master vibrator coil. There and the various types of previous Connecticut coils are shown in operation in connection with timers and spark plugs. The company also exhibits for the first time its new high-tension magneto in operation with plugs under pressure to secure as nearly as possible the usual working conditions. New 1911 model electical meters are exhibited made up with silver-plated etched dials and full-jeweled bearings. There is also an improved type of magneto kick switch.

Briggs & Stratton Co.—This is the first year that the B. & S. products have been in the market. They include the B. & S. igniter, by means of which current consumption is brought down to the minimum and much lower than is possible with vibrating coils. It consists of a complete ignition system designed to be mounted rigidly on the engine base and driven by the shaft ordinarily provided for a timer or distributor. The entire outfit is carried in a moisture and dustproof metal case, 5 inches high by 3¼ inches in diameter. Within this case is a non-vibrating spark coil, a balanced condenser, a positive circuit making and breaking mechanism, a high-tension distributor and means for advancing and retarding the spark without moving the case, distributor or high-tension wires. The company also exhibits the Star igniter in which similar principles of construction are embodied but which is intended for use on one and two-cylinder four-cycle engines.

K-W Ignition Co.—This company, which has been manufacturing low-tension magnetos for the past four years, has now placed on the market a complete line of high-tension magnetos, embodying the principles successfully employed in the low-tension magnetos, such as the stationing of both secondary and primary windings in the center of the magnetic field. The high-tension current goes direct to the



STEARNS COMPANY HAS AN ATTRACTIVE LAYOUT ON MAIN FLOOR

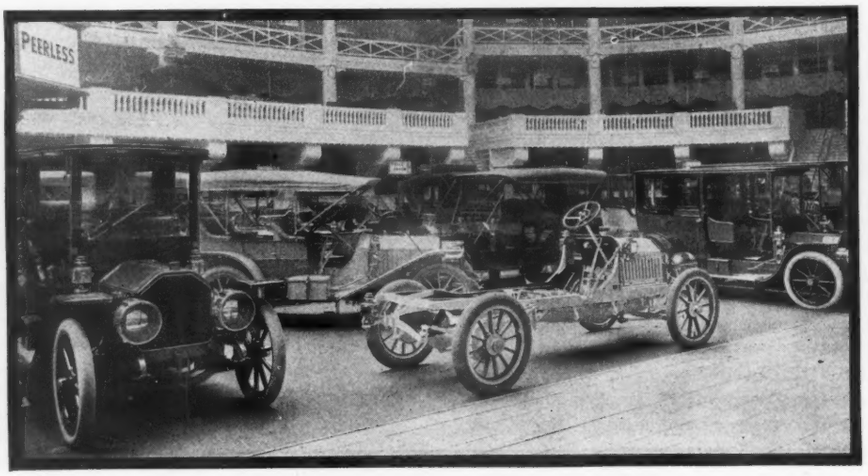


TOURING CARS, LIMOUSINE AND CHASSIS ON MATHESON STAND

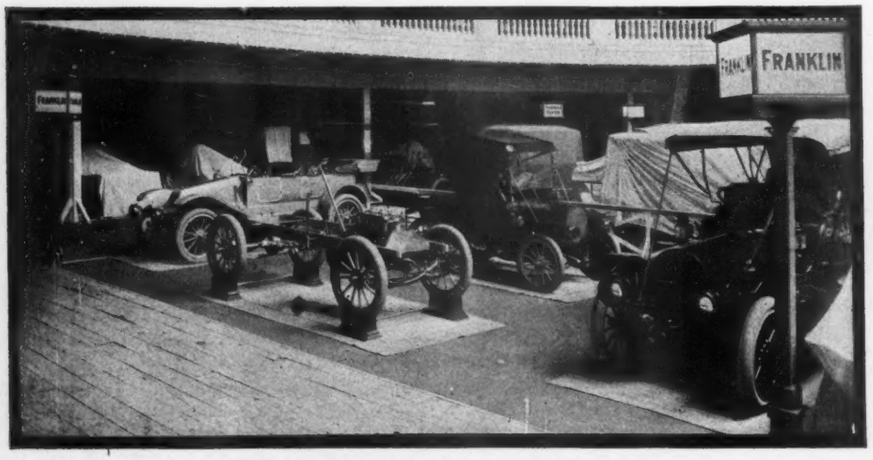
distributor and from there to the spark plugs, thus allowing a very large amount of space all around the secondary winding for insulation purposes. Furthermore, the windings, both secondary and primary, are circular in shape, thereby insuring the largest possible number of turns with the shortest length of wire. The model H T magneto will start an engine and give a hot spark at seventeen revolutions per minute. The castings are made from brass, machined to extreme accuracy with special tools and appliances. The circuit-breaker can be removed without any tools and adjusted to take up wear. The distributor can also be taken down without tools in a moment's time and cleaned. All bearings are of the highest grade imported annular ball type. This model magneto is intended only for motor car and marine engines of the highest power. The model H magneto is for engines of 30 horsepower and under. Model O is a magneto for two-cylinder opposed engines.

Tray Plate Battery Co.—The High Efficiency batteries as made by this company for ignition and lighting purposes have only recently been placed in the market after 3 years of practical road test. The grid used is of the checkered type, giving greater capacity to the square inch of plate surface and also having exceptional durability. By a special process the active material is made exceptionally hard and porous so that the tendency to sulphate is materially lessened. Only rubber separators are used. The 6-volt 60-ampere size as used for ignition is said to be averaging 1,200 to 1,500 miles per discharge, according to vibrator adjustment. The company also makes batteries specially designed for electric lighting.

Philadelphia Storage Battery Co.—There has been added to the line of vehicle batteries made by this company a new Long Distance battery intended for those users who wish to get the utmost radius of action per battery charge and increased speed. The plates are made thinner than in the other types of batteries made by the company, affording a greater area of surface without increase of weight or size. Active plates are now made in four different thicknesses. As indicating the difference in thickness of the new plates, it can be pointed out that in a cell measuring 6¼ by 6⅛ inches long and wide there are twenty-three plates as compared with seventeen plates in one of the older cells measuring 6½ by 6⅛ inches, both cells standing 12⅜ inches high. The largest number of plates regularly assembled in standard cells is twenty-five. The lead grids used in these batteries are of bridge or truss construction, braced in all directions and greatly increasing their strength to support the active material. The company also shows its Philadelphia igniter or portable ignition battery.



CHOICE LOCATION OCCUPIED BY THE PEERLESS

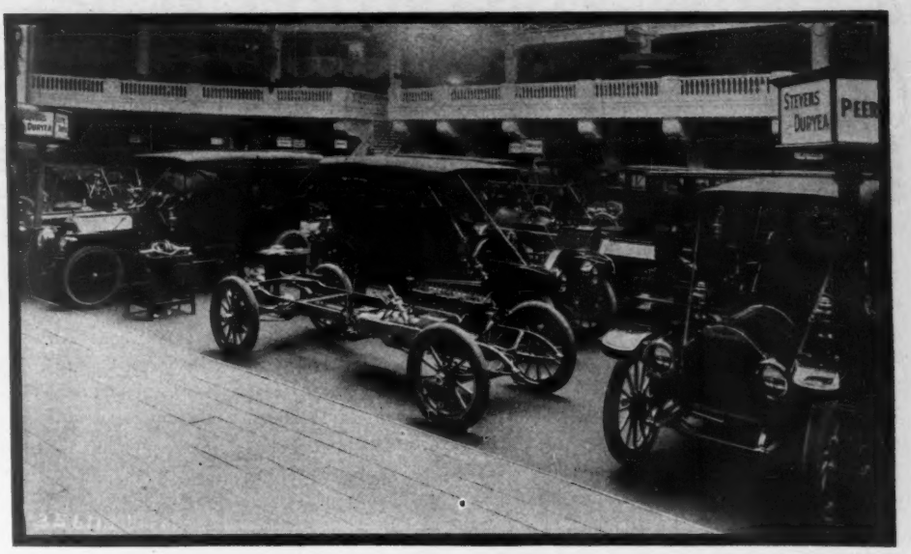


FRANKLIN WELL LOCATED WITH ITS AIR-COOLERS

Willard Storage Battery Co.—The feature of this exhibit is a section of a chassis with the complete Elba electric generating and lighting system in operation. This system consists of a small generator driven from the engine or clutch shaft and connected to a Willard storage battery. The generator is self-regulating and so arranged as automatically to keep the battery in a fully charged condition regardless of the current consumption for ignition or lighting. The bulbs used in the lamps have cluster loop plating Tungsten filaments and are provided with a special form of socket that prevents the bulbs being shaken out of place. The Willard company furnishes all or any part

of this system for installing in cars without materially changing the existing lamp equipment.

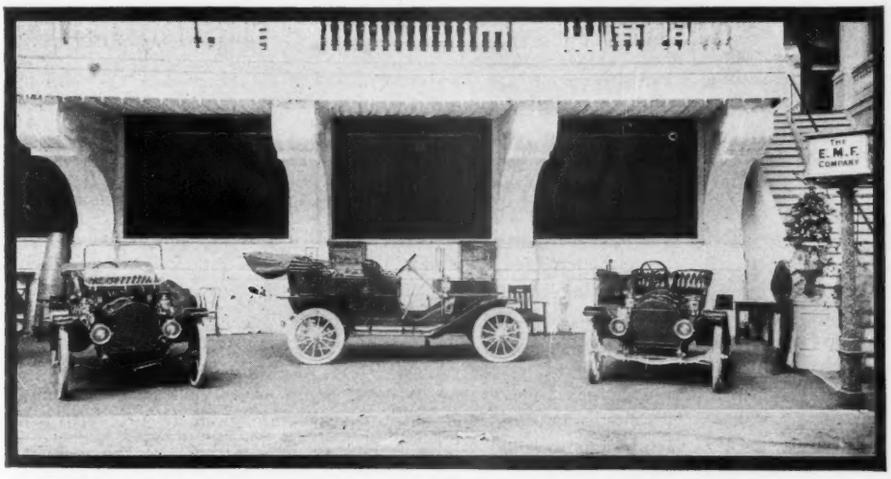
Burn-Boston Battery and Mfg. Co.—This company is making the first exhibition of its battery to the trade except in Boston. Its battery has been used for stationary work for a number of years and has been standardized upon by a number of large railroads and electric clock and telephone companies. It was formerly made in the glass jar type but is now put up in a case that is unbreakable and unspillable. The company asserts that its glass jar battery gave more units of current per cubic inch than any other battery made and it has now applied this to its portable motor car battery in even a greater degree. The case is made of insulating and salt-water-proof material, which recommends the battery for motor boat work.



STEVENS-DURYEA EXHIBIT IN A PROMINENT PLACE

MISCELLANEOUS

H. H. Franklin Mfg. Co.—In addition to its exhibits of pleasure cars on the main floor and air-cooled trucks in the basement, this company shows in the gallery an extensive line of zinc and tin alloy castings for motor car use. These include pump and fan parts, small gears and pinions, ratchet wheels and dial numbers for odometers, bearing brasses and so on. These metals are cast in dies and present a perfectly smooth finish, requiring no machining.

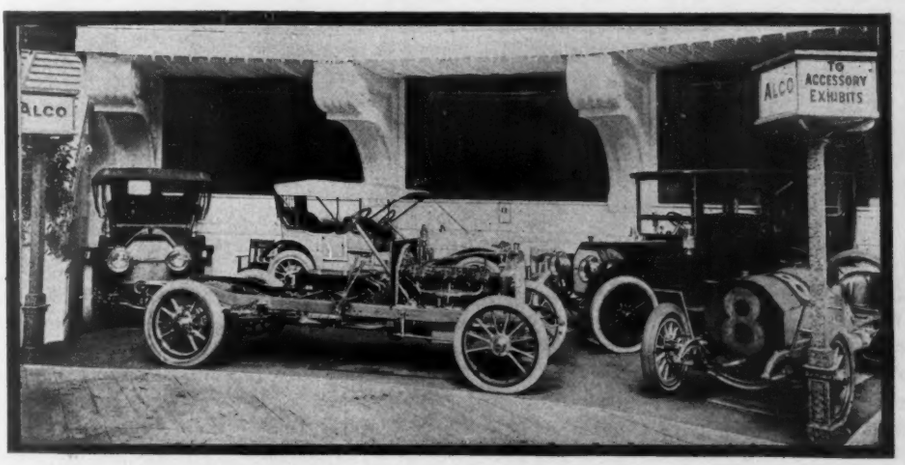


BOTH THE E-M-F AND FLANDERS ARE SHOWN

Recometre Co. of America—The Recometre for producing a visible and permanent graphic record of the movements of a motor car on the road in combination with a speed-indicating instrument and odometer, has been changed somewhat in form for 1910 but in principle and internal construction remains practically the same as heretofore. There has been added to this instrument, however, a new and separate device called the Spedindicator for recording the speed, distance, time and stops made by a motor car. The company has worked for 2 years to produce an instrument of this kind, fitted with a visible indicating dial and pointer, that would be mathematically and mechanically correct at all speeds and whose needle would agree with the graphic record and that could be relied upon to invariably indicate the same speed for the same number of revolutions of the car wheel. In the new Spedindicator it is claimed that this has been accomplished. The instrument is cylindrical in form, has a 4-inch dial and a scale reading up to 80 miles an hour.

Springfield Metal Body Co.—A completely upholstered and finished limousine body and an open touring car body are shown by this company. Both are made with aluminum panels and are finished in black. The limousine shows well proportioned and graceful lines. The touring car has flush sides, the space between the dash and front edge of the forward seat being permanently closed on the right side and provided with a door on the left.

Waterhouse Co.—In making its first national show display this company offers as a new article an oxy-acetylene autogenous welding blow-pipe outfit with portable tanks. It is claimed to be the only blow-pipe outfit in which the acetylene tank can be returned to the factory or elsewhere and refilled with gas under compression. The blow-pipe itself is so constructed that according to the manufacturers it is impossible to get a back fire or flare back. Waterhouse float-feed carbureters in sizes up to 3½ inches are also shown, and the Bemus timer, which is made by this company, is shown in operation at the stand.



VANDERBILT-WINNING ALCO IS PROMINENT HERE

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The 1910 National Tour

AT the present time the matter of a national reliability tour for the approaching season is causing considerable concern with many of the makers who have been consistent supporters of the Glidden tour in past seasons. Up to the present no decision has been announced by either the Manufacturers' Contest Association of the American Automobile Association as to whether the Glidden tour will be continued or a different form of national trophy hung up for competition. From the real value to motoring it matters little whether it is a Glidden trophy or a national cup providing the contest is the big one of the season. Granted that a big American tour will be conducted, the point of prime importance is that of selecting a section of country in which the motor industry is deserving of stimulation and in which there are big possibilities of increased sales of cars should the tour pass through such sections.

UP to the present one section of the country has been clamoring for the tour and has been advancing as its great reason for obtaining it its historic importance, rather than the selling possibilities of cars or the development of a big market. This historic and patriotic spirit is excellent, but it is doubtful if it will meet with the general approval of the makers who have to pay in large sums of dollars and cents for the conduct of the tour. The maker enters such tours solely from a business point of view and the better the future selling field through which the tour passes the better he is pleased. If the tour were solely to try to test to the extreme the status of the cars, the ideal place would be to pick out a few circuits in the eastern mountain ranges and keep the cars going over these day after day until the desired mileage was obtained; or ship the machines out to Denver and the Rockies and spend the 2 weeks driving them up and down the rocky canyons or other almost equally impossible trails in that part of the country. Neither of these courses would prove satisfactory; a course selected should be through territory that is just being developed and territory which has sufficient wealth to buy cars and buy them in quantities.

IT would be an error during the coming season not to once more invade the vast agricultural territories west of the Mississippi river. The buying ability of northern territory across the Mississippi was well demonstrated last year and it would be well this year for the makers to investigate this territory further south, encroaching perhaps into northern Texas or perhaps as far south as the central part of the state. In addition to this section is another good section east of the Mississippi and extending from the Ohio river south through Kentucky and Tennessee, both of which are good buying states and both of which offer big opportunities for advancing the business.

IF the historic phase must be looked after why not start a big amateur tour—barring every maker—and run it through the historic sections of the country, arranging the schedule to permit of stop-offs at the leading historic points en route and giving the people an opportunity to drink deeply of the historic wealth of such sections. Running a tour through such a section would be of itself sufficient inducement to warrant a big amateur entry list for several successive seasons. This in itself would be a most worthy object and one which the national organizations could take up with the greatest dispatch.

Progress Must Be Kept Up

NOW, that both of the big New York motor car shows have passed public inspection and the details of the many cars exhibited have been laid before the scrutinizing public, it is possible to arrive at a few general trends, if this term may be used, of the industry at the present moment. In a general restrospect of both shows it would appear that there has not been during the year that time devoted to research and progress of designs that the industry warrants, and which progress has been shown by some of the European countries as exemplified at the recent Olympia show. This is accounted for by the fact that the past year was essentially a manufacturing one, many concerns bending every energy towards turning out as many cars as possible and at the same time erecting as many factory additions as it was possible to get materials for and workmen to erect. With some others the racing situation engrossed the attention to such an extent that the improvement of the car itself was to an extent neglected.

THIS must not be interpreted as meaning that the car of today is a poor design or an unsatisfactory vehicle—far from it—the performances of our cars in the many contests of the past year show the stamina of them; but even if the car is satisfactory there are ways in which it can be improved and so made more proof against troubles and breakages. It might be suggested that on several machines a neater job of the wiring could be effected, a department which has received much attention during the year at the hands of the foreigner. One or two American concerns are at present setting a pace for the world in this respect and some of the other makers could imitate them to great advantage. The days of high-tension leads losing themselves all over the cylinder heads is not yet past, although it should be; and the more precautions taken to protect them from moisture and oil the better for the ignition system. Acessibility should be the keynote and makers should endeavor to turn out a car where the get-at-ability of the various devices will show that some thought has been expended along these lines.

ONE type of body has made its appearance this year, namely, the torpedo, but in this there appears, and the demonstrators mention, an unsettled spirit of design. Any new body type calls for a continued study of conditions and it will only be after the American maker has delved deeply into the pros and cons of the body art and science as applied to the torpedo type that a fixed design will be evolved. One body type admirably suited to winter conditions in America and of which scarcely a single type was exhibited at either show by American builders, is the coupe with inside control. The coupe body is ideal for the physician field, and for the business man, who drives his own car, there is nothing more satisfactory for winter use. Why this type of body has not been developed further by the many makers is somewhat of a mystery; but it may be that the makers have now more than they can do in the body line in building the touring car and limousine lines, so that they do not care to spend time experimenting along a new line when the demand cannot be supplied in the present channels. This is good manufacturing logic with a brisk demand, but should the demand suddenly wane there would then be a general scramble to the work of designing various types to meet the varied demands of buyers that are found in this country at this time.

GOOD ROADS NOW IS COLORADO'S PROBLEM

Active Campaign for Better Highways in the Near Future Just Started by Westerners

DENVER, Colo., Jan. 8—The subject of good roads is becoming a particularly important problem in Colorado, where the finest scenery in the world is often inaccessible to the tourist because of the lack of convenient transportation. An active campaign has been started during the past year by the Rocky Mountain Highway Association, the Denver Motor Club, the Colorado legislature and the state penitentiary management, and a great deal of political work has been done toward bettering the roads. These same agencies will continue the work during the coming year.

In all parts of the state the county commissioners have taken a livelier interest during the last year than ever before in the business of keeping the rural roads of their own counties in good repair; convict labor has been employed with excellent results on roads in the southern part of the state.

The first move, which has been the incentive in Colorado, was in the session of the legislature last winter. The chief good roads measure presented to that body was the law providing for the appointment of a state highway commission and granting state aid in the building of roads. This measure, as originally presented to the general assembly, provided for the appointment of a commission of three members, each representing a different section of the state. The bill, as finally passed, carried with it an appropriation of $50,000 per year. The measure received every vote in both branches of the legislature, and the appointment of this commission by the governor is now all that is needed to place Colorado on an equal standing with the majority of other states in the union in the matter of good-road building.

The bill now on the statute book provides for a state highway commission of three members, one from the eastern part of the state, one from the western section and one from the middle southern section. Each member of the state highway commission is to receive $600 yearly, with the exception of the chairman, who shall receive a salary of $1,200 per year. The commission may name as its secretary a competent civil engineer, whose duty shall be to look after the active work of that body. One of the first things to be done is the making of accurate maps showing the main traveled roads of the state, with especial reference to their bringing counties and cities in closer communication. Records shall also be made of all suitable deposits of stone, gravel, etc., that may be used as building material. These maps and records shall form the groundwork of the commission's activities.

In the construction of good roads the state highway commission will not in any way interfere with the duties of the county commissioners. The measure is so designed that it is the duty of the state highway commission to aid as far as possible the various county commissioners in securing good roads. A provision of the bill is that the commissioners of any county may call upon the state highway commission for aid financially in the building of their roads. This aid will be given in those cases where the roads to be constructed shall form parts of highways between two or more counties.

The last general assembly also passed other measures to aid the cause of good-road building. Among these were the measures providing for the continuation of the work on the state road at Trinidad and the building of the road between Canon City and Colorado Springs. Both of these roads are being constructed by convict labor and with most satisfactory results. It has been found that the roads so constructed are better than roads built by contract labor, and that the cost of construction is much lower. Another and most important factor is the excellent effect the work has on the discipline, health and life of the convicts at the state penitentiary. A chance to work on the state road is eagerly welcomed by all.

Denver has or will benefit from the campaign now being carried on for good roads, in all of which the Rocky Mountain Highway Association has been among the leading factors. Roads are to be constructed leading from Denver to Golden, from Denver to Colorado Springs, and from Denver northward through Greeley, Fort Collins and other points. Appropriations have been made for all this work. The interest being taken in good road work is manifested most plainly in the increase during the past year in the membership of the Rocky Mountain Highway Association. The membership now numbers many of the most prominent and influential men of the state. The Colorado Automobile Club has joined the association in a body, having charge of that work which comes under the motor division.

One of the most successful plans followed by the association in order to keep in touch with road conditions throughout the state was what has become known as the postal card system. Postal cards are sent to all members of the association, on which they are asked to report road conditions as they found them when traveling over the state. These reports were returned to the secretary of the association and by him forwarded to the officials of the various counties in which the bad roads were found. In nearly every case the authorities have taken such steps as were within their province to remedy conditions as they found them.

Coming Motor Events

JANUARY

8-15—Madison Square garden show, New York.
17-22—Show of Kansas City Motor Car Trade Association.
17-24—Philadelphia show.
24-29—Show at Portland, Ore.
24-31—Show at Washington, D. C.
24-29—Ninth annual Detroit show.

FEBRUARY.

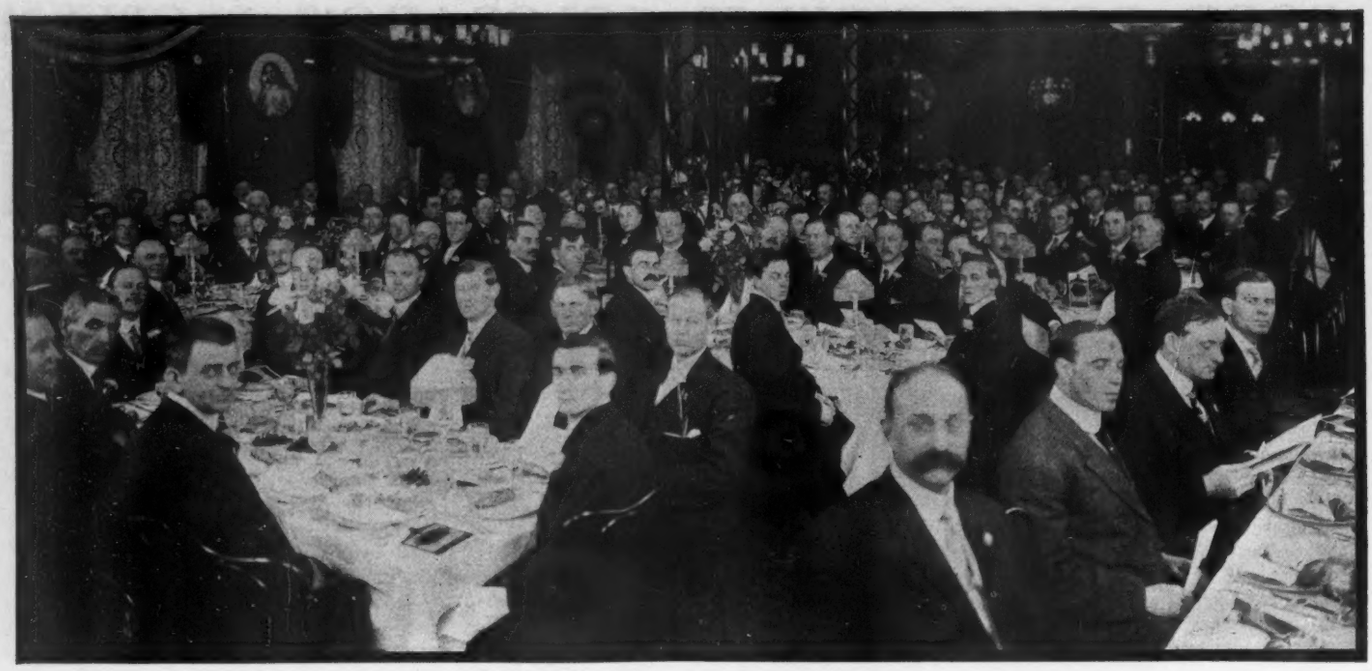
4-6—Mardi Gras track meet, New Orleans.
5-12—N. A. A. M. show, Chicago Coliseum.
14-19—Show at Hartford, Conn.
14-21—Show at St. Louis, Mo.
14-18—Annual show at Buffalo.
19-26—Show at Newark, N. J.
19-26 — Inter-mountain show, Salt Lake City, Utah.
21-26—Show at Binghamton, N. Y.
21-26—Annual Cincinnati show.
22-27—Milwaukee show.
28-March 5—Kansas City Automobile Dealers' Association's show.

MARCH

5-12—Boston show.
21-28—Denver Motor Club show.

GIVEN TO THE BRUSH

Minneapolis, Minn., Jan. 10—Final disposition of the trophies in the reliability tour from Minneapolis to Fargo and return under the auspices of the Minnesota State Automobile Association last August were announced last week, the Dispatch trophy, over which dispute had arisen, being awarded to the Brush runabout, driven by D. H. Kemp, of the Minneapolis Automobile Club. The Gregg trophy, to the entrant of the winning car costing $1,000 or less, also went to the Brush. It was offered by Jesse Gregg, of St. Paul. The statistics of the winning car show the Brush to have weighed 1,470 pounds at the time of the contest, and it had a perfect road score. It was also found to be perfect when final technical examination was made. The ton mileage recorded was 21.41. In his report submitted to the president H. S. Johnson, chairman of the contest committee, stated: "In the touring cars perfect scores were made by the Chalmers-Detroit, entered by H. Stanley Johnson, and the Pierce, entered by Reuben Warner, Jr. To determine the car making the best relative showing the ton-mileage gasoline economy test was applied and under such test the Joyce trophy was awarded to the Barclay Automobile Co. and the Johnson trophy to H. Stanley Johnson. Of the three trophy winners, the best showing being made by the Brush Automobile Co., the Dispatch trophy has been awarded to the Minneapolis Automobile Club. This trophy was offered to the club of which the entrant of the car making the best showing is a member, and is to be held by that club for 1 year, when it is again offered as a prize in a similar tour." The little Glidden trophies, with one exception, are all held in Minneapolis now.



ANNUAL DINNER OF MAXWELL-BRISCOE COMPANY WELL-ATTENDED BY DEALERS

News Angles of New York's Two Big Shows

American Automobile Association Names Two of Its Most Important Committees—Contest Board Holds Its First Meeting and Prepares to Whip Into Shape the New Rules—National Executives in Session

NEW YORK, Jan. 12—Special telegram—The first regular meeting of the contest board of the American Automobile Association was held this forenoon in the association headquarters, 437 Fifth avenue, those in attendance being Chairman S. M. Butler and members D. Beecroft, Chicago, T. A. Wright, Wilkes-Barre, Pa., and Joseph Wood, Newark, N. J. S. B. Stevens. of Rome, N. Y., was the only absentee. After preliminary organization the first task of the new organization consisted in considering a protest arising out of the Phoenix, Ariz., track race of the past autumn, the matter being finally laid aside for additional evidence.

One protest settled was that lodged against the Mason car in conjunction with the north Texas endurance and good roads tour December 13 to 19. The protest took the form of an appeal against the decision of the referee in the contest, the contest board sustaining the referee's decision. The matter referred to an incident in the tour in which many of the cars got mired in a bad bit of road, one contestant getting in particularly bad, so that the others were asked to lend assistance. It had been agreed upon by the referee that should any of them break any parts in assisting in the rescue work the usual penalties would be imposed. As a result the Mason car broke a roller bearing and had to have a new one replaced. The Mason was the winner of the run, according to the results.

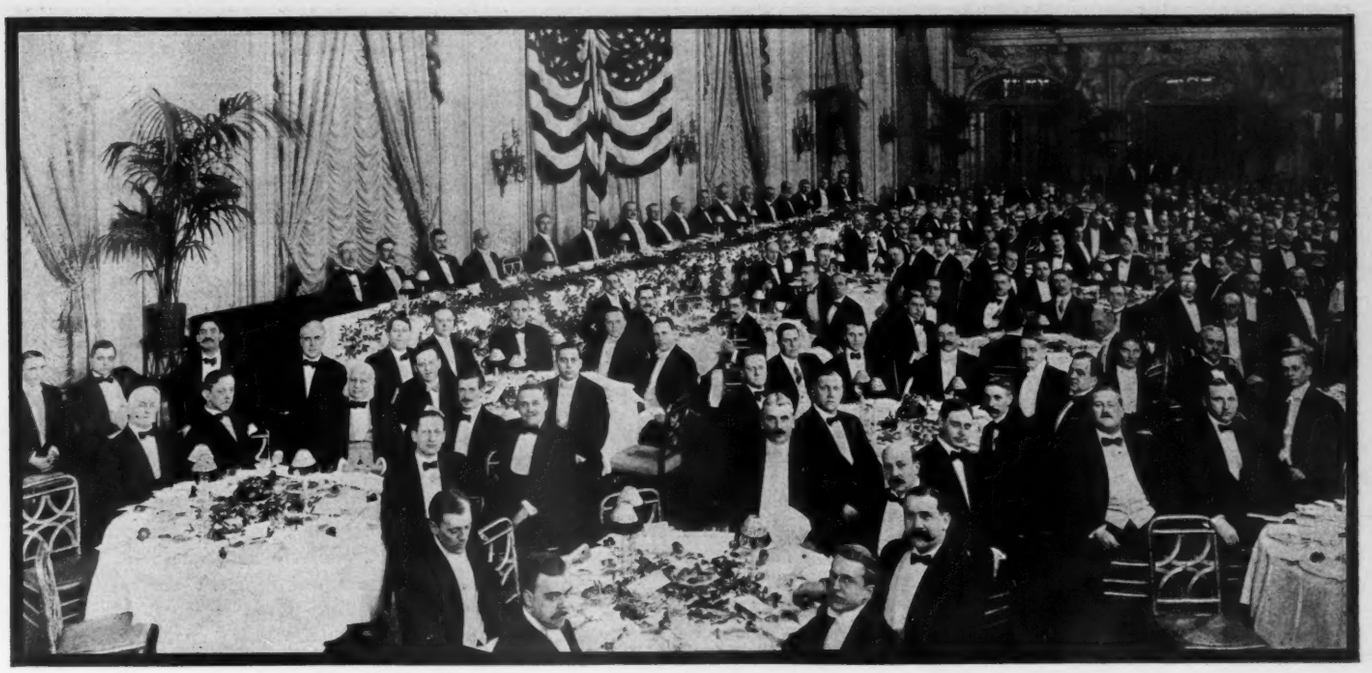
The chief task of the new contest board at present is whipping into final shape the rules that will shape the destinies of motor car contests for this season, whether these contests be speedway races, track races, hill-climbs, economy tests or reliability runs. A rough draft of these rules has been made and it is expected that within a week something definite will be announced regarding them.

During the week the Manufacturers' Contest Association held several meetings and the matter of a proper definition of the term stock car and stock chassis was settled, as also was the question as to the number of cars of a certain model a manufacturer must build before it will be considered a stock model. Although nothing of the association's findings has been made known it is rumored that some form of sliding scale has been adopted whereby a maker building 10,000 cars will have to build many times more of one model in order to have it stock than a concern that only builds 500 cars all told in a season. This sliding scale, or percentage basis, has been carefully calculated by the manufacturers and it is understood that their recommendations of the scale will stand for the coming season in competitions.

Another task which Chairman Butler is having his board consider is the matter of a schedule for the entire season. The majority of the promoting organizations throughout the country were communicated with several weeks ago, being asked to set the date for their big events for the coming season and already a formidable array of dates for speedway and track events, for road races, for reliability runs, for hill-climbs and other events have been received. As a result it will be possible for the new board to announce practically the complete schedule for the entire year before the first event has taken place. The value of this to the manufacturer consists in that he can make a careful selection of the entire field and pick out those dates that he considers best suited for his line. To the promoters it insures against unnecessary conflict of dates in the same section of the country, which would work unnecessary havoc to all parties concerned.

THREE A'S HOLD MEETING

New York, Jan. 12—At the January meeting of the A. A. A. executive committee the announcement was made that thirty-three state associations are now included in the national body, Texas and Alabama being added at the meeting. A further addition came to the association through the joining of the St. Louis Automobile Club as an unfederated organization and which will subsequently be included in the formation of a Missouri state association. The matter of the rejuvenation of the Illinois state association was gone into and certain wishes of President Charles P. Root of this association



ANNUAL BANQUET OF MOTOR AND ACCESSORY MANUFACTURERS BRINGS OUT BIG CROWD

granted. It is expected that during the coming season the Illinois field will be developed as far as possible.

George B. Ellis, president of the Automobile Club of Southern California, Los Angeles, and John N. Brooks, of the Connecticut state association, were elected members of the executive committee, and the nomination of the following directors by their respective clubs was approved of: Dr. E. W. Omensetter, North Wildwood, N. J., Automobile, Club; Walter E. Edge, Atlantic City Automobile Club; J. J. Hinners, Edgewater-Fort Lee Automobile Club; Edward C. Smith, Automobile Club of Vermont; William E. Goucher, Jamestown, N. Y., Automobile Club; J. B. McMurrich, Oswego Automobile Club.

A. A. A. BOARDS ANNOUNCED

New York, Jan. 7—President Lewis R. Speare, of the American Automobile Association, today appointed the following on the contest and technical committees;

Contest board—S. M. Butler, chairman; active members of the contest board, David Beecroft, Chicago; S. B. Stevens, Rome, N. Y.; T. A. Wright, Wilkesbarre, Pa.; Joseph H. Woods, Newark, N. J.

Associate members of the contest board—Frank G. Webb, Brooklyn, N. Y.; Frank M. Joyce, Minneapolis, Minn.; F. C. Donald, Chicago, Ill.; L. P. Lowe, San Francisco, Cal.; C. H. Gillette, Hartford, Conn.; Harry W. Knights, Boston, Mass.; James T. Drought, Milwaukee, Wis.; R. P. Hillman, Los Angeles, Cal.; P. D. Folwell, Philadelphia, Pa.; Ralph W. Smith, Denver, Colo.; William G. Humphreys, Atlanta, Ga.; Harvey Granger, Savannah, Ga.; E. H. R. Green, Dallas, Tex.; Charles P. Shanks, Portland, Ore.; G. P. Bullard, Phoenix, Ariz.; Mason B. McLoughlin, Cleveland, O.; T. C. Campbell, New Orleans, La.; Henry J. Spuhler, Pittsburg, Pa.; Charles W. Sedwick, Indianapolis, Ind.; George Lane, Detroit, Mich.

Technical committee of the contest board—Alden L. McMurtry, chairman, New York; David Beecroft, Chicago, Ill.; F. E. Edwards, Chicago, Ill.; Henry Souther, Hartford, Conn.; Alex. Churchward, Schenectady, N. Y.

Many Dinners Are Given By the Tradesmen

Makers of Accessories Meet and Re-Elect Their Old Officers—Thomas Presented with the New York-Paris Race Trophy—Banquet of Maxwell and Overland—Three Hupmobiles Driven From Detroit to Show

NEW YORK, Jan. 6—The annual meeting of the Motor and Accessory Manufacturers was held in the association offices last night and officers for the coming year were elected. The old board was elected as follows:

President, H. E. Raymond, B. F. Goodrich Co., Akron, O.

First vice-president, H. T. Dunn, Fisk Rubber Co., Chicopee Falls, Mass.

Second vice-president, F. E. Castle, Atwood-Castle Co., Detroit, Mich.

Third vice-president, C. E. Whitney, Whitney Mfg. Co., Hartford, Conn.

Treasurer, W. S. Gorton, Standard Welding Co., Cleveland, O.

Secretary, P. S. Steenstrup, Hyatt Roller Bearing Co., Newark, N. J.

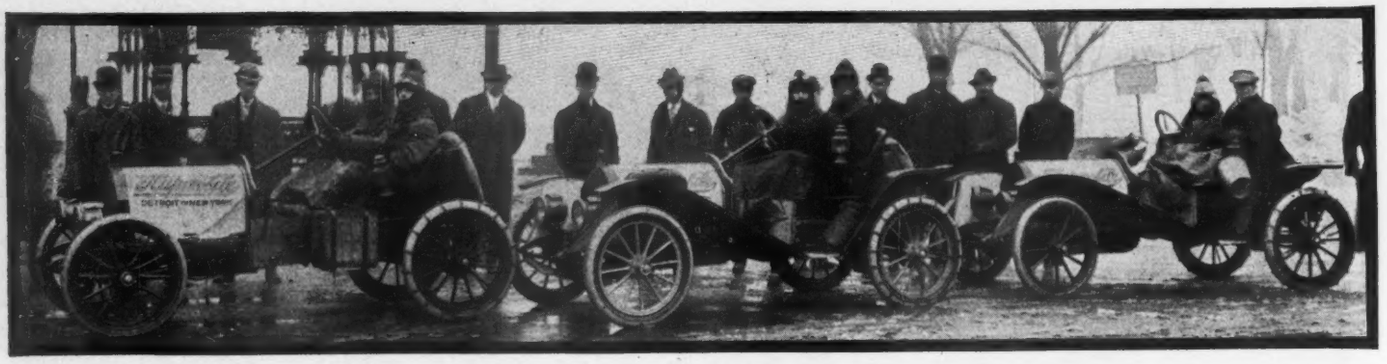
In addition a new office of manager was created and W. M. Sweet, who has been acting manager for the past year, was elected to this office. Mr. Sweet has been continuously connected with this organization since its inception over 4 years ago and is more familiar with its various phases of activities than any of the others in the organization.

The Motor Accessory Manufacturers' Association is at present in a particularly healthy condition, with a membership of 174 concerns representing an aggregate valuation of $307,000,000. During the year between thirty-five and forty new concerns have joined and at the annual meeting, which preceded the banquet, one new concern, the Auburn Pump Co., Auburn, N. Y., was voted into membership.

There are in the accessory field today approximately 350 possible makers of some standing, so that the association numbers but half of the possibilities within its ranks and good opportunity remains for Manager Sweet to do some stalwart missionary work. The association holds its annual meeting in January. There is a semi-annual meeting in the summer and in addition to these meetings are the quarterly meetings of the board of directors.

At the banquet plates were arranged for 250 and when President H. E. Raymond took his place at the speaker's table there was scarcely a vacancy. After indulgence in the good things as enumerated in an elaborate menu card intermixed with popular songs from the gallery, the choruses of which were heartily taken up by the banqueters.

President Raymond introduced Toastmaster Job E. Hedges, who for several seasons has filled this role in the annual dinners given by the American Motor Car Manufacturers' Association, but which dinner was not given this year. Job Hedges has the reputation of being the funniest man in New York and throughout the evening not only lived up to his reputation but established with everyone the fact that he also combines with his humor the sagacity of the bench and the



THREE HUPMOBILES AS THEY APPEARED IN NEW YORK AFTER TRIP FROM DETROIT

astuteness of the politician. Speaking with reference to money he said: "I would rather be able to use a little intelligently and make somebody happy than to have so much as to have everybody else mad at me." On further he remarked: "I would rather be humane and unknown than unhumane and well advertised."

In his address H. O. Smith, president of the A. M. C. M. A., spoke on the high plane and the magnitude of the accessory field. He hoped that the days were past when an accessory maker would sell a transmission designed for certain horsepower to a manufacturer who expected to couple it up with a motor more than 50 per cent in advance of its designed power. He looked forward to the time when the appointment of a joint commission would be made for such work and a standard of some form arrived at whereby it would be impossible for such conditions to arise.

Colonel George Pope was reminiscent of the early days of motoring and bicycling times. John C. Wetmore, on behalf of the press, told of his experiences during the past fall with a story on a parts maker who sold his whole output of axles at $125; later a maker of a big line wanted some and the parts man agreed to give him some at $175. This was arranged. Still later another car builder in distress offered the parts maker $225, and got a quantity of the output.

NEW YORK-PARIS CUP PRESENTED

New York, Jan. 9—At a banquet, at which nearly 300 guests partook of the hospitality of the E. R. Thomas Motor Co., the New York-to-Paris trophy, offered by Le Matin of Paris and the New York Times, was formally presented by the representatives of the donors, at the Automobile Club of America last evening, Jan. 8. There was a large table circling the banquet hall in the shape of a horseshoe, and at the oval's end was placed a table at which were seated the guests of honor and the officials of the Thomas company. Robert Lee Morrell officiated as toastmaster and at his right and left were seated George Schuster and George Miller, who were in the winning Thomas car almost constantly from the time started on its 20,000-mile journey at Times square, New York city, until it stopped in front of the office of Le Matin in Paris, 26 days ahead of its nearest competitor. Running all the way round the horseshoe-shaped table was a series of photographic views which depicted the progress of the journey.

At the toastmaster's signal Messrs. Schuster and Miller, accompanied by E. R. Thomas, advanced to the center of the horseshoe, where the trophy stood draped with the American flag, and simultaneously pulling two wires they released the flag, which fell disclosing to the assembled guests the symbol of their victory. The orchestra played the "Star Spangled Banner" and the guests cheered. Mr. Thomas made a well chosen speech of acceptance on behalf of his company, and Messrs. Schuster and Miller told of some of their experiences in Siberia.

The trophy is said to be the largest of its kind ever made, and stands 6 feet 6 inches in height, weighing slightly over 1,600 pounds. The materials used in its construction are all native to the four nations represented in the race—the United States, France, Germany and Italy. The pedestal is of green Italian marble and the sub-base is of French marble of pink shade. The medallions are of German bronze, depicting the coats of arms of the four competing nations, and the German bronze globe that surmounts the whole is covered in bas relief showing the continents and the route of the great race in American silver. The whole is surmounted by a silver American eagle.

An elaborate menu was served and at its conclusion many addresses of congratulation were tendered the host. Among the speakers, in addition to those mentioned above, were Colonel George Pope, chairman of the A. L. A. M. show committee; Alfred Reeves, general manager of the American Motor Car Manufacturers' Association; H. P. Burchall and W. J. Hanley of the New York Times, John C. Wetmore, the dean of the New York motor car press men, and S. M. Butler, chairman of the contest board of the American Automobile Association.

ANNUAL MAXWELL DINNER

New York, Jan. 7—Each year the annual banquet tendered by the Maxwell-Briscoe Motor Co. to its agents and other representatives becomes a more enjoyable feature of that progressive corporation. These banquets, given at the time of the palace shows, when the attendance can be the largest, and that of the present year, took place at the Hotel Manhattan last evening, under the auspices of the sales organization of the company, and catered to 275 covers. The menu card was elaborate and was replete with caricatures of the leading lights of the Maxwell-Briscoe organization, the outside cover depicting a radiator upon which was embellished in color a large piece of beef roasting over a hot rotisserie fire. This year the usual quota of speechmaking was abolished, Mr. Briscoe making the speech of welcome, and introducing a program of vaudeville which was good and appealed strongly to the sentiment of the assembled guests. The head of the table was occupied by Benjamin Briscoe and J. D. Maxwell, who were flanked on either side by the leading lights of the company's sales organization. Branch managers and district managers from all parts of the country were on hand besides agents from nearly every state in the union as well as some from Canada.

HUPMOBILE SNOW PLUG

New York, Jan. 7—Leaving Detroit Monday night, December 27, three Hupmobiles arrived in New York yesterday after fighting practically every inch of the 748 miles through deep snow drifts and bitter cold. The men who had the hardihood to face the biting zero winds of Canada and New York and buck the deep snows were John E. Baker, secretary of the Hupp Motor Car Co., Detroit; J. R. Drake, of New York, treasurer of the company; Fred P. Harvey, purchasing agent, and R. W. Keeler, Michigan sales agent for the Hupmobile. Two others who started from Detroit—Calvin H. Dunlap, assistant sales manager of the Hupp company, and Arden Yinkey, of Toledo—left the party at Niagara Falls and Utica and came to New York by train for the opening of the show. The last day's run was from Wappingers Falls to New York, a distance of 66 miles. The start was made from Windsor, Ont., the night of December 27. By morning progress had been made to Blenheim, Ont. After an hour's sleep and breakfast, the run was resumed, and Tuesday night saw the three Hupmobiles in the little town of Ingersoll, Ont. Rougher weather was experienced, and it was necessary to literally force the little cars

through deep drifts of snow. It required an hour and a half to cover 3½ miles between Thamesford and Ingersoll. From Ingersoll to Niagara Falls was the run December 29, and this side of the falls the real battle with the snow began. Batavia, N. Y., marked the finish of the struggle December 30, and the following day the cars were pushed forward to Auburn, N. Y. Saturday it was hoped to make Utica, but after a strenuous day the men were glad to run the cars into a farmer's barn and sleep in the farmer's beds, 14 miles west of the upstate city.

Sunday the cars pushed on as far as Amsterdam, N. Y.; Monday night they reached Kinderhook, and Tuesday, the last night on the road, was spent in Wappingers Falls. Every instant of delay throughout the trip was due to the deep snow. At times the snow was drifting so rapidly that the track of the trail-breaking car was obliterated by the time the others followed. Only once were horses required to extricate a car from difficulty, and that was when one dropped into a ditch so deep, just outside of London, Ont., that the combined efforts of the men could not put it back on the road. Mechanical troubles were unknown. Each morning the cars were ready, without tinkering or adjustments, for another day's hard work. Ordinarily the Hupmobile averages 28 to 30 miles per gallon of gasoline. A comparison of this mileage with the 8 to 9 miles per gallon averaged throughout the trip gives some idea of the terrible road conditions encountered.

SUCCESS OF PALACE SHOW

New York, Jan. 10—Figures dealing with the show that came to a close at Grand Central palace last week indicate that all records for attendance of agents and the public, and for profits at a motor car exhibition, were supplanted by this year's affair. The total attendance was 104,660, with Friday, the last day, taking first place, when more than 19,000 people passed through the gates from 9 in the morning until closing time. The last 3 days of the show were the heaviest, many out-of-town people arranging to spend the last half of the week at the palace and the next 3 days at the garden affair.

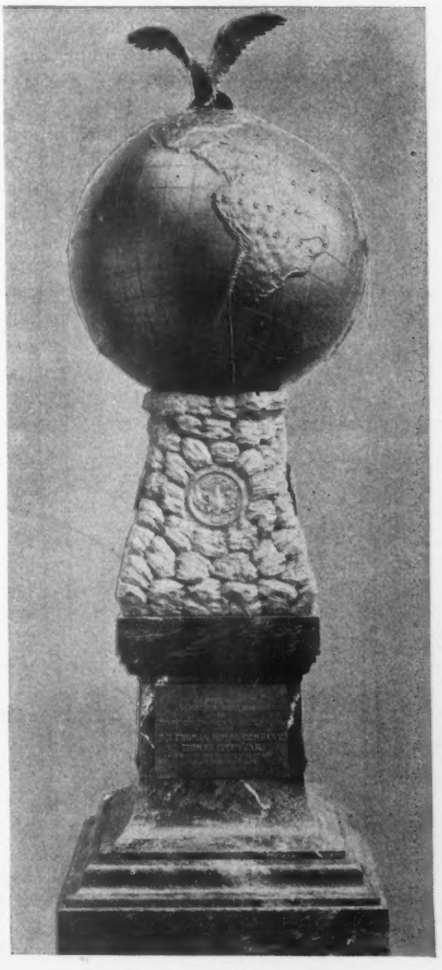
The show brought together the greatest gathering of leaders that ever attended a motor car exhibition. There were 1,284 dealers provided with season buttons by the management when they presented their invitation at the show committee's office. The names and addresses of these dealers were furnished to members of the A. M. C. M. A. They not alone included dealers from all parts of America, but a large number from Canada and six from Europe. In addition to this form of liberality on the part of the management, salesmen and others connected with the trade were admitted without charge upon presentation of cards before 1 o'clock each day. The attendance of carriage dealers was 243.

Notwithstanding the liberal policy toward exhibitors, dealers and other members of the trade, the management declares that the show will be more profitable than any previous show held in this country. That the exhibitors did an extraordinary amount of business with dealers, as well as with the general public, is well known. Associated with the American Motor Car Manufacturers' Association in the conduct of the show, and interested in the profits, are the Importers' Automobile Salon and the Motor Accessory Manufacturers, which are partners in the show.

At the palace on Saturday, Marcus Nathan, the secretary, said that the palace was built 22 years ago and during all that time it never had such a handsome exhibition nor one so important in the industrial world, while the attendance exceeded anything on his records. The palace will not be torn down for at least 2 years.

OVERLAND GIVES A SPREAD

New York, Jan. 11—At Martin's cafe today F. N. Barker, sales manager of the Willys-Overland company, gave a banquet to the visiting press at the show. More than sixty of the scribes attended. The occasion was made use of in announcing the general publicity campaign which this concern is preparing to carry on throughout the country. After the luncheon A. G. Batchelder, chairman of the executive committee of the American Automobile Association, assumed his role as toastmaster and introduced J. N. Willys, leader of the Overland forces, and who but briefly referred to the present magnitude of this concern as compared with its obscure beginning a few years ago. F. N. Barker spoke briefly on the situation, and Mr. Lasker, for the special benefit of the press, outlined the advertising campaign. At the conclusion of the luncheon each of the guests was presented with a thermos bottle fitted in a neat leather case.



THE NEW YORK-PARIS TROPHY

LICENSED SITUATION IN DETROIT

Detroit, Mich., Jan. 10—The recent crop of motor car manufacturers have been reviewing with interest the results of the efforts of the Metzger Motor Car Co. and the Hupp Motor Car Co. to secure entrance into the fold of the licensed association. Their success has been widely commented on, but the failure of the lessees of the Selden plant to pay anything but courteous attention to the requests of other concerns for entrance is causing an increasing degree of alarm. It is believed locally that the licensed association is contemplating legal action against the firms which have been refused licenses and which have not applied for them. The action will come, it is rumored, in the form of an application for injunction prohibiting the sale of cars not sold under license. Legal advice received by several local concerns which have looked into the matter has it that it is probable that injunction proceedings may be modified to a decision whereby the defendants may be allowed to proceed with the manufacture of cars, providing they give bond to indemnify the licensed association in the case of damages accruing. This probably would result in the absolute ruin of a number of the younger motor car manufacturers, as well as making the sale of their product a matter of extreme difficulty. Owing to the fact that only a very few of the new concerns will be able to secure materials necessary to the manufacture of cars this year, it is not expected that the crisis will become imminent for another season, however.

MORE LAND FOR CHALMERS

Detroit, Mich., Jan. 11—The Chalmers-Detroit Motor Co., which has been adding rapidly to its factory space of late, has just completed a deal by which it comes into the possession of more than 5 more acres of real estate on Jefferson avenue, the new purchase being between the ground occupied by the present plant and the Belt Line railway, which is at present connected to the plant by a spur road. The additional property will be employed for the purpose of factory additions, the general design of which will be announced very shortly. The Chalmers-Detroit factory is now one of the largest in the city, comprising a total floor space of nearly 25 acres which are used by the company.

LUBRICATION

Part II

IN last week's issue of Motor Age the lubricating systems of the different cars exhibited at the Grand Central palace were analyzed in detail and this week a similar analysis of many of the licensed cars at present on exhibition at the Madison Square Garden show is given. Motor Age readers will recall that the independent cars employ four major lubricating systems, for convenience designated as No. 1, circulating system with some form of oil pump in the basement oil reservoir of the crankcase; system No. 2, a circulating system in which the flywheel is the pump; system No. 3, in which the mechanical oiler located on the motor base is used; and system No. 4, the compression one, in which crankcase compression assisted by gravitation, feeds the oil to the motor parts. In the cars of the licensed makers, who are exhibiting this week, the oiling systems roughly divide themselves into these classifications, but in addition a system No. 5 which for convenience will be designated a combination system must be added.

Generally speaking more versatility is shown in the oiling system of the licensed cars than those of unlicensed makes. There has not been a perceptible landslide to any one of the four or five systems referred to. Those who have used system No. 1 are continuing it, having made no further changes than that of locating the pump more conveniently and adding improvements by way of sight feeds. The licensed cars have not a single exponent of system No. 2, namely, that one in which the flywheel maintains the circulation of the oil. There is not a single example of system No. 4, the compression type, which has a few followers in the ranks of the A. M. C. M. A. System No. 5, the combination one, which is added, includes such systems as employ double pumps as found on the Winton and Pope-Hartford, in which one pump delivers oil to the motor parts and another returns this oil from the crankcase to the oil reservoir where it is filtered and made ready for recirculation.

In speaking of motor lubrication it has been customary with many not familiar with the finer details of the many systems involved to designate everyone as splash, which in the majority of cases is correct, but there are examples in which no oil is carried in the crankcase proper and consequently no splash created by the lower ends of the connecting rods dipping into an oil level. In general the splash system is supreme and the only difference with many consists in the method of maintaining the splash; in the circulating system the oil pump does it, the overflow returning to the reservoir in the base of the crankcase. In the mechanical type oiler the splash is maintained by this lubricator feeding so many drops of oil per minute through its several leads to the motor bearings, cylinder walls or the crankcase direct.

The Various Exponents

In a general resume of the licensed field it appears that the following division among respective systems exists: System No. 1—circulating, Pierce, Lozier six, Stearns 60, Stearns 30, Winton six, Columbia, Chalmers 40, Chalmers 30, Hudson, Buick, Palmer & Singer, Oldsmobile, Alco, Selden-Mercer; system No. 3—mechanical oilers, Locomobile, Thomas, Franklin, Studebaker-Garford, Stevens-Duryea, Cadillac, Apperson, Autocar, and Elmore; in a slightly different classification to No. 3 comes Packard, Peerless, Corbin; Packard and Peerless with a plunger pump scheme and Corbin with an eccentric pump, but in which system the circulation of the oil is not affected. Lastly comes the system in vogue in the E-M-F and Flanders which will be referred to in detail later.

In an individual examination of the different systems attention is first directed to the Pierce-Arrow, Fig. 3, which is of the circulating non-splash type and which is as used on these cars for several years. Properly speaking it is a circulating-gravity type, in which an oil pump located in conjunction with the oil reservoir forming the basement of the crankcase elevates the oil to a rectangular tank supported above the cylinders' heads. From this tank nine oil leads pass, seven to the main bearings of the crankshaft, one to the timing gears at the forward end of the motor and one to a gauge glass on the dash, this dash gauge showing the level of oil in the gravity tank over the cylinders. In the crankcase proper scarcely a drop of oil exists so that the accepted splash idea is not present in this motor. The oil to the crankshaft bearings not only lubricates these, but also oils the lower connecting rod bearings through the drilled crankshaft so that there is a positive oil feed to the thirteen bearings on the crankshaft.

The lubrication of the cylinder walls, pistons and wristpins is by a mist caused by the oil thrown off from the connecting rod bearings and the crankshaft bearings, this oil being broken up by the rotation of the crank throws and connecting rods and misted into the open ends of the cylinders. In order that too much oil may not enter the cylinders baffle plates are inserted in the open ends, the only opening for the

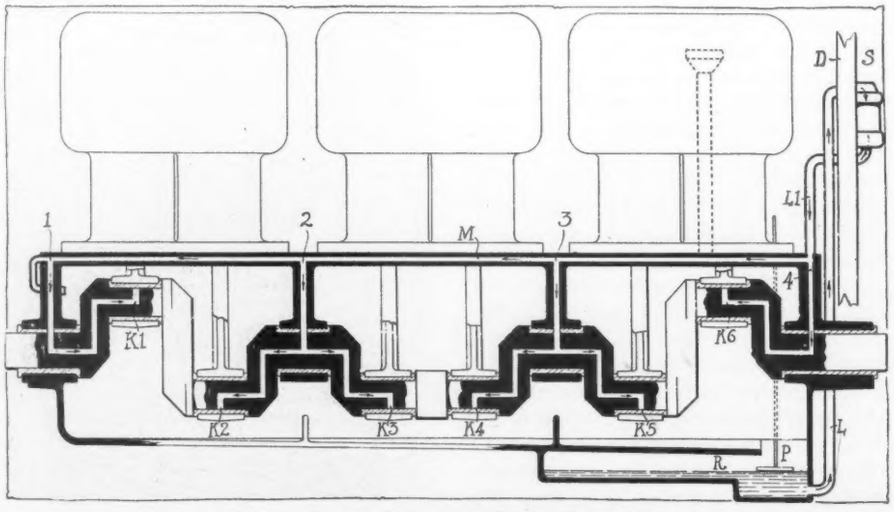


FIG. 1—OILING SYSTEM ON LOZIER LIGHT SIX

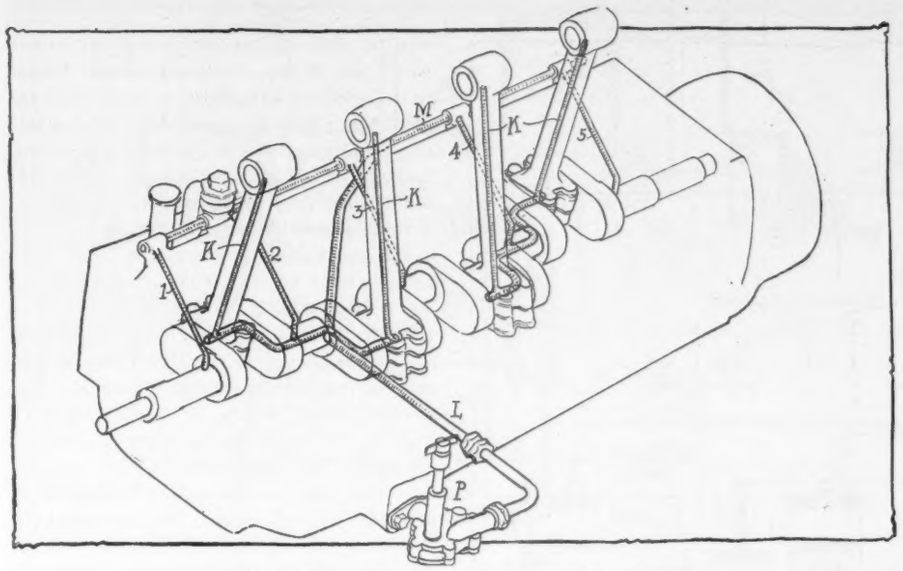


FIG. 2—KNOX POSITIVE FEED LUBRICATING SYSTEM

oil to enter the cylinder being that in the baffle plate in which the connecting rod works. The company has taken still further precaution to prevent an excess of oil in the cylinders and consequent carbonization in the combustion chamber. This consists in an extra groove at the base of piston, this groove having a beveled lower edge and a right-angled upper edge, the right-angled upper edge being to prevent excess oil rising past the pistons.

The adjustment of the oil flow to the different crankshaft leads is in connection with the nozzles in the base of the gravity tank. In connection with each nozzle is a wire gauze for screening dirt and a nipple, the latter for the regulation of the quantity of oil flowing, there being a greater quantity of oil to the third and fifth crankshaft bearings than to any of the others because of the fact that each of these lubricates two of the connecting rods. It is expected that with a system of this nature the oil is drained off at regular intervals and fresh supply added.

Knox Positive Feed

A characteristic example of the No. 1 circulating system is that used on Knox cars and which is shown in perspective, Fig. 2. In this car the oil pump P, located outside of the crankcase, is driven through a vertical shaft and delivers its supply of oil through a main leader L communicating direct with a horizontal distributing pipe M located outside of the crankcase. From this pipe five leads, 1, 2, 3, 4, 5, lead to the five crankshaft bearings in the four-cylinder type and in the six-cylinder car there are seven of these leads. Once the oil is in the crankshaft bearings it flows through the drilled crankshaft to the lower bearings of the connecting rods; and thence through pipes K is forced to the wristpin or piston pin bearings. By this arrangement the Knox cars have a positive lubrication to all the crankshafts as well as to all of the upper and lower bearings of the connecting rods. In connection with this system the Knox company draws attention to the fact that delivering the oil to the inside of the bearings the natural tendency is that as the oil flows outward through the bearing any particles of foreign matter are carried out rather than into the bearing, so that the bearing life is thereby conserved. As in the majority of cars using No. 1 system the cylinders of the Knox are oiled by a mist which finds its way into the open end whence it reaches the cylinder walls and is carried upward by the piston rings. A pressure gauge located in the sloping footboard registers the amount of oil pressure maintained by the pump and which pressure may be varied at will through an adjustable spring bypass on the left side of the motor. A similar example of accessibility appears in connection with the oil screen which may be readily removed by a socket wrench furnished for this purpose.

Last year on the 15-30 Stearns the No. 1 circulating system was in use on the motor, but on the 30-60 cars a mechanical oiler incorporated in the motor arm was used. This year the 30-60 model has fallen into line with its smaller brother and both employ the circulating system. The Stearns circulating system differs from that used in the majority of other cars in that the oil is not delivered to the crankshaft bearings or to the cylinder walls. It is not delivered to the crankshaft bearings because they are of the annular ball type and consequently do not require such attention from a lubricating point of view. On the other hand the oil is fed to the lower bearings of the connecting rods and it may be added here that this is practically the only make of car in which this procedure is carried out. In order to work this principle out effectively the connecting rods are not of the conventional design. They are of cross-section with the grooved sides facing the sides of the cylinders, instead of located fore and aft as in the general construction of cars. Having the groove toward the side allows of feeding the oil in below the base of the cylinders so that it drops into this groove and thence finds its way into the bearings. An additional precaution to insure the oiling of the lower connecting rod bearings is worked out in the shape of scoops on the connecting rod caps, these scoops dipping into the oil level in the crankcase.

The Stearns circulating system is conventional in practically all other respects, the oil pump being located outside of the basement compartment of the crankcase. From the pump the oil is elevated to the motor head, where a regulating valve is introduced by means of which the supply to the different parts is controlled. A particularly large filler pipe is used on one side of the motor.

Lozier Six System

A very conventional circulating system is used on the Lozier Six, a diagrammatic illustration of which appears in Fig. 1. Beneath the rear pair of cylinders the

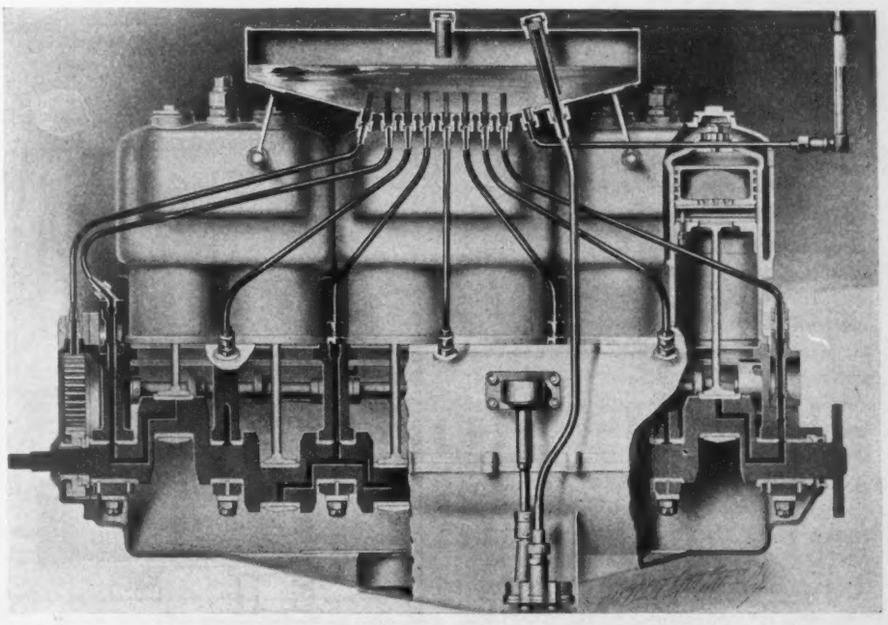


FIG. 3—PIERCE CIRCULATING-GRAVITY NON-SPLASH TYPE

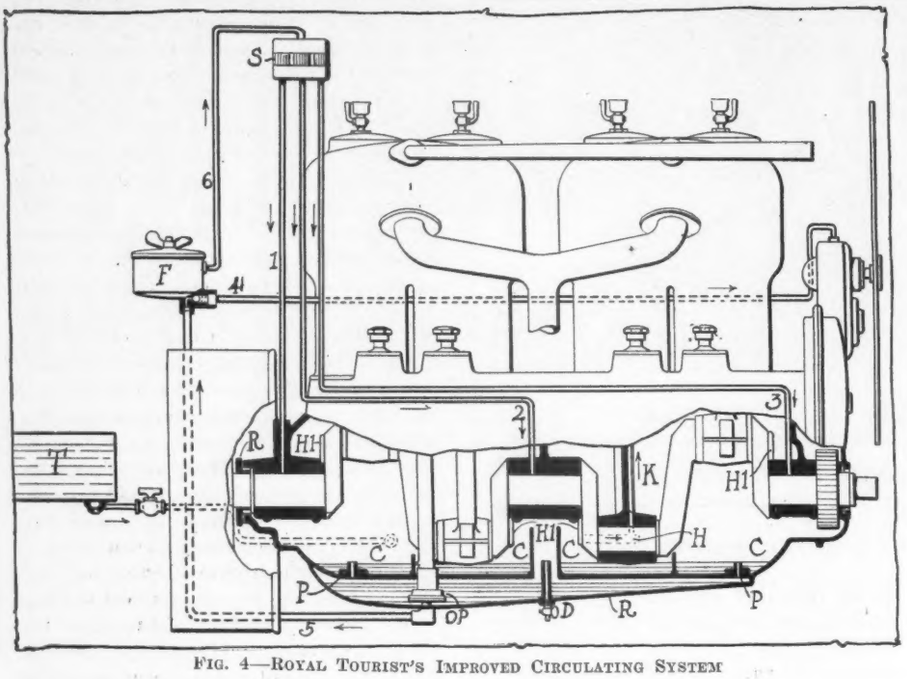


FIG. 4—ROYAL TOURIST'S IMPROVED CIRCULATING SYSTEM

crankcase incorporates an oil reservoir R, the rear of which is an oil well containing a gear pump P. This pump elevates the oil to the distributing manifold M, it passing by way of a pipe L to a sight-feed S on the dash D and returning to the pipe M through another lead L1. From the main pipe M four branches, 1, 2, 3 and 4, connect direct with the crankshaft bearings. The oil flows through these bearings and to the drilled crankshaft, reaching as it does the six lower bearings of the connecting rods designated respectively K1, K2, K3, K4, K5 and K6. A splash system is maintained in connection with the circulating one, the crankcase proper being divided into three compartments by a pair of partitions shown. This system includes the usual straining of the oil through meshed screens before it returns to the pump to be recirculated. A notable feature, however, in conjunction with this is delivering all of the oil to the sight-feed S on the dash so that the driver can always be aware of the lubricating of his motor. Without going into further detail it is understood the wristpin bearings as well as the cylinder walls and piston rings are lubricated from the splash.

Improvements on Royal Tourist

On the Royal Tourist cars the No. 1 circulating system of last year has been considerably improved and simplified for the coming season and is characterized chiefly by its thoroughness, the pump delivering oil direct to the three main bearings of the crankshaft, the four lower connecting rod bearings, the four wristpin bearings and to the gear housing at the forward end of the motor in which are the fan gears, those for the magneto and camshaft. In addition a splash is maintained in the crankcase for the betterment of the cylinder walls, etc. Fig. 4 diagrammatically shows this system, indicating the location of the oil pump OP, and from it the main lead 5, which connects with the filter F. From this filter a lead 6 connects with three sightfeeds S on the dash, whence the three oil ducts 1, 2, 3 lead direct to the crankshaft bearings. Overflow oil from these bearings is picked up on the eccentric oil rings H1 and by drilling the crankthrows the lower connecting rod bearings are cared for; and by means of pipes K secured to the connecting rods lubrication of the wristpin bearings is effected. The overflow pipe 4 from the filter F is under control of a ball valve and its supply goes to the fan, magneto and timing gears. Not to be overlooked in connection with this system is auxiliary tank T, located at any convenient point on the chassis frame. From this tank surplus oil can be put in the crankcase proper. The crankcase has three partitions, and overflow standpipes P automatically regulate the oil level. A drain cock D affords an easy method of removing practically all of the oil. It will be noticed that the pinion on the forward end of the crankshaft is not housed in a separate compartment and that the oil flowing over it immediately drains into the crankcase, a fact which prevents the leakage of oil at the forward end of the motor to a very great extent.

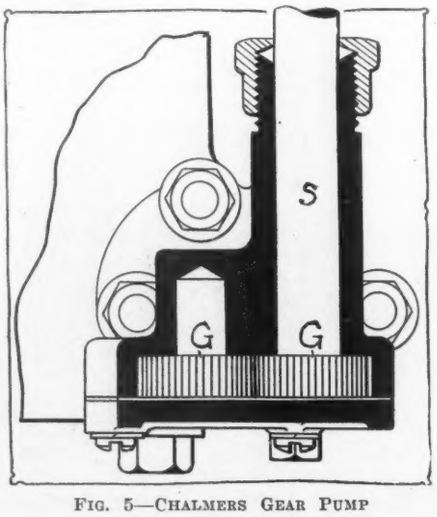


FIG. 5—CHALMERS GEAR PUMP

Two Chalmers Arrangements

On the Chalmers-Detroit 30 and Chalmers-Detroit 40 No. 1 circulating systems are employed, but they differ, however, in that the 30 uses a plunger oil pump, whereas a gear pump, as used for several seasons, is employed on the 40 model. The plunger pump of the 30 is illustrated in Fig. 6, in which the plunger D, located accessibly on the exhaust side of the crankcase just in rear of the magneto, is reciprocated by cams C on the camshaft, this pump lifting the oil from a reservoir incorporated in the crankcase base and delivering it to the front of the crankcase, where a level is supplied within the crankcase for splash lubrication. The fact that in this motor the crankshaft is carried on two races of ball bearings facilitates lubrication to a marked degree. A screw plug on the right side of the oil reservoir permits of draining the reservoir as well as flushing it, and an overflow cock is furnished in the crankcase proper by means of which the proper oil level is maintained.

With the Chalmers 40 a conventional gear pump is used. Fig. 5, in which the constituents are two pinions G in constant mesh with each other. Both are driven through the vertical shaft S, which takes its drive from the camshaft. The oil from this pump finds its way to the crankshaft bearings, from whence it overflows, furnishing a splash in the crankcase, which cares for the cylinder walls and wristpins.

Hudson Possesses Novelties

In the Hudson motor of the four-cylinder unit, an oil well extends the entire length of the crankcase and has two or three quarts capacity. At the rear end of this reservoir is an oil well in which is located a plunger pump which elevates the oil through a copper tube to the front end of the crankcase proper. The crankcase has three partitions or transverse webs. The oil delivered to the front end overflows consecutively the three partitions until it reaches the compartment beneath the fourth cylinder and in which com-

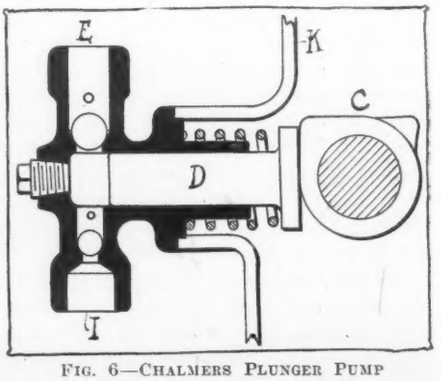


FIG. 6—CHALMERS PLUNGER PUMP

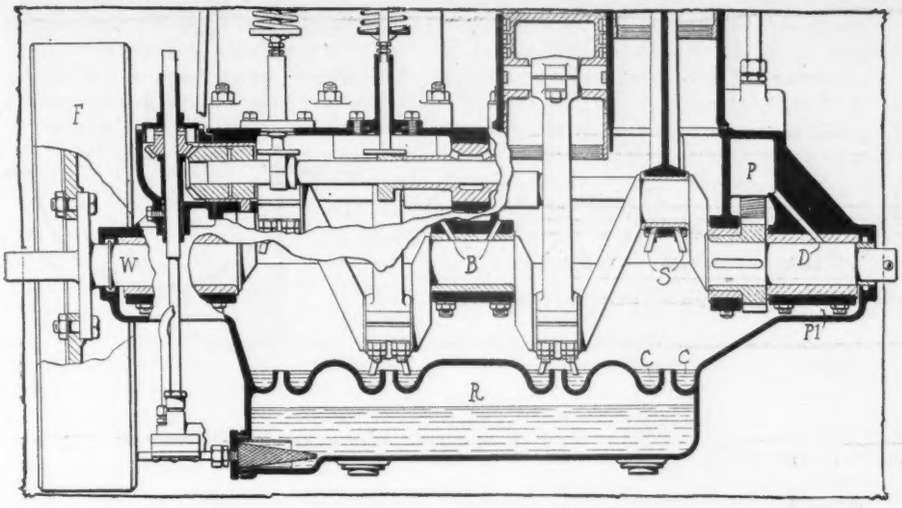


FIG. 7.—NEW HAYNES CIRCULATING OIL SYSTEM

partment is an overflow pipe from whence the oil escapes to the reservoir. An oil level is located beneath each cylinder into which the respective connecting rods dip. From the sprays thus created the entire inside of the motor is oiled, including all of the moving parts excepting the timing gears, which are located in a separate compartment and run in grease. In this lubricating system as the oil is pumped into the front end of the crankcase it will, on reaching the correct level, overflow into the next compartment, which operation is repeated until the overflow pipe at the rear is reached. By way of precaution a second overflow pipe, situated at a considerably higher level, is provided at the front end of the crankcase, so that with a car running down hill the oil will not flood the front end of the case. One filling of the motor is said to be sufficient for 250 to 300 miles driving. The company has provided on the right hand side of the oil chamber two try cocks, which are accessible through a door in the side of the mud apron. In case of a long drive it is suggested that these should be opened, the oil reservoir filled until the level of the try-cock is reached. No sight-feeds are furnished on this motor, it being the assumption that the driver should investigate the oil level every morning.

Introduced on Overlands

On three of the Overland models—40, 41 and 42, a circulating splash system is introduced for the first time, whereas on one of the models, 38, a mechanical oiling system is retained. The circulating system in vogue on the three models is illustrated in Fig. 8 and offers little in the way of an innovation from other circulating systems. It is a pure splash system, with no drilling of the crankshaft in order to oil the lower connecting rod bearings. The oil pump of the gear type is located on the rear of the crankcase and driven through a vertical shaft and bevel gears from the camshaft. The reservoir R, with which it is in constant communication, has a large capacity, and the capacity of the crankcase proper is very limited; in fact, it is confined to a couple of small cup-shaped compartments, C, for each connecting rod. Each connecting rod bearing has a pair of oil pockets, P1, which are filled with the splash, and on the main bearings of the crankshaft are very large sized pockets P, which collect the splash and which is led through a pair of drill holes to the halves of the bearing. The attachment of a scoop S to each connecting rod assists in oiling the lower bearings, as the oil picked up by the scoop is by pressure forced upwards through the scoop into the bearing.

On this motor a precaution has been taken to prevent oil leaking from the rear bearing of the crankshaft, which precaution consists in a drill hole D in the under side of the bushing which leads to a sloping passage leading back into the crankcase.

1910 Haynes New System

On the new Haynes model a circulating system has been fitted for the first time. Fig. 7 shows the gear oil pump located outside of the crankcase immediately in advance of the flywheel, and driven through vertical shaft and bevel gears from the camshaft. The role of this pump is solely to supply a splash system to the crankcase proper. There are two compartments C in which an oil level for each connecting rod is maintained, and on each connecting rod cap are two projections S which dip into these oil levels and create the splash. Above the center crankshaft bearing are two oil passages B which lead into the bearing, from whence the oil overflows into the compartments C. The forward bearing has a large oil pocket P for collecting the splash, from which a pipe D leads to the center of the bearing. All oil working out past the end of this bearing is by a channel P1 returned to the crankcase. Similar precautions are taken for preventing the escape of oil at the rear bearings, and in addition this bearing has an integral ring W which by centrifugal force prevents the passage of oil.

Oldsmobile a Pioneer

A very simple yet efficient circulating system is used on the Oldsmobile and is illustrated in Fig. 9. At one end of the crankcase appears the gear oil pump, which elevates the oil through a coreway to the lower part of the base and sends through a horizontal pipe lying within and along one side of the crankcase, the arrows indicating the escape of oil from this pipe to each of the six compartments of the crankcase, the illustration being for a six-cylinder motor. An ingenious method is used for maintaining a constant level in each compartment, in the form of an overflow outlet in one side of the crankcase, as shown in the end view of the case. This comprises the complete system, excepting for the drain plugs in the bottom of each compartment. The whole system is incorporated in the lower half of the crankcase, and the oil reservoir extends under one side of the crankcase for its entire length.

Two illustrations are given in Fig. 11

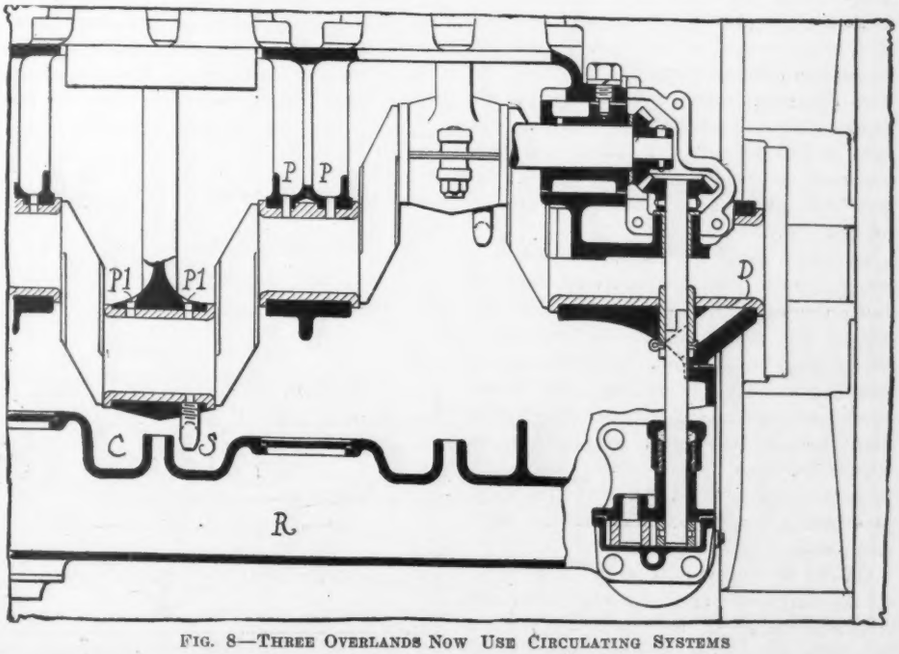


FIG. 8—THREE OVERLANDS NOW USE CIRCULATING SYSTEMS

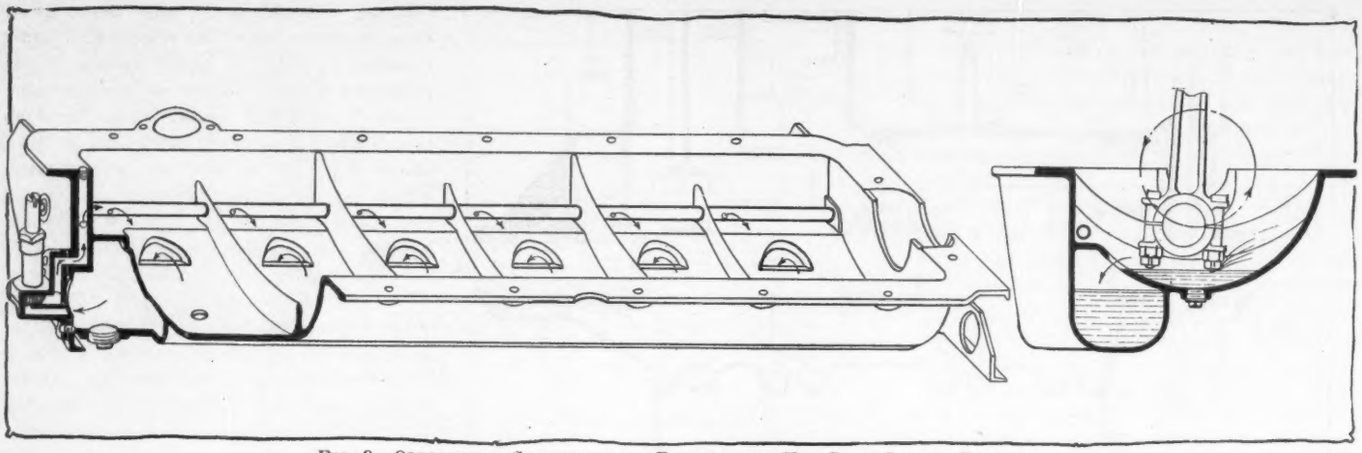


FIG. 9—OLDSMOBILE SYSTEM WAS A PIONEER AND HAS BEEN LITTLE CHANGED

of the circulating system in use on the Columbia motor, the diagrammatic portion at the left end of the illustration showing a couple of novelties in connection with this system, one of which is a float resting on the oil in the reservoir and attached to a lever, with its opposite end connected with a vertical rod rising outside of the crankcase. As the oil level falls, the graduated rod rises, and the driver has a quick and ready method of noting the exact amount of oil in the reservoir. This part of the illustration also shows a rather unique method of controlling the oil level in the four compartments of the crankcase proper. This is accomplished by four tubes which enter the crankcase angularly from the side containing the graduating rod just referred to. In part of these rods within the crankcase is a V opening, the altitude of which determines the oil level, in that the overflow begins at this point and passes through the hollow tubes and escapes into the reservoir. The right portion of the illustration is a perspective view of the lower half of the crankcase, showing the gear oil pump at the rear end and the short pipe leading from this pump and connected with a cored passageway in the crankcase. The usual number of offshoots to the four crankcase compartments are in place. Before discussing the many lubricating systems based on the No. 1 circulating system, it will be well to mention such other concerns as Selden, Mercer, Buick, Palmer and Singer and Alco, who make use of this system.

In all of these systems the reservoir is integral with the crankcase base and contains the oil Pump. In the Palmer and Singer the oil is led to the crankshaft bearings and to the housing containing the fan gears. The oil entering the crankshaft bearings is led through the drilled crankshaft to the lower bearings of the connecting rods, the overflow from which furnishes the splash for all of the wristpins bearings as well as the cylinder walls and piston rings.

On the Mercer the oil pump delivers the oil through a copper pipe placed along one side and inside of the crankcase. From this pipe the oil is directed against the connecting rods, which set up a suitable mist to care for all of the interior parts and bearings of the motor. On the crank throws are oil wrings in which the oil is collected and delivered to the bearings.

The Buicks all make use of a circulating system, the oil from the gear pump in the oil reservoir being delivered through a sight feed on the dash and thence to the front and rear compartments of the crankcase proper, where desired levels for splash purposes are maintained.

Two Combination Systems

Having thus lengthily dealt with the circulating group, it is now in order to consider a couple of combination circulating systems. One of these is the improved Pope-Hartford, of which a diagram is not given. In brief, this system employs a mechanical lubricator, located on one side of the motor, from which a series of pipes feed the oil to the four cylinders. The crankcase has a basement or oil reservoir beneath it into which the oil delivered to the cylinders by the mechanical lubricator drains after supplying a splash level in the compartments of the crankcase proper. So far we have not a circulating system, and the missing link is found in a suction pump located in the mechanical oiler, and which pump returns the oil from the crankcase reservoir to the mechanical oiler, thus completing the cycle of circulation. In the case of the suction pump delivering a surplus of oil to the mechanical oiler, the latter is located with an overflow standpipe through which all excess oil returns to the crankcase. The crankcase proper is fitted with a filling tube through which oil may be fed to the crankcase in the reservoir. Petcocks in both the crankcase and the reservoir act as gauges in supplying oil to these compartments, and in addition the crankcase has overflow standpipes fitted with gauze strainers, so that a predetermined oil level is maintained in the case. Cylinder walls are lubricated by direct feed to each, as well as by splash. The main bearing to the crankshaft as well as the connecting rod bearings are lubricated by splash.

Two Winton Pumps

On the Winton six-cylinder models a novel circulating system is used in which two pumps are employed, one pump delivering the oil to the motor parts and the other pump bringing it back to an oil reservoir, where it is ready to be recirculated. Both pumps are of the plunger type and are operated from an eccentric on the rear end of the crankshaft. The injection pump takes the oil from the tank at the left side of the motor and delivers it through leaders to the four bearings of the crankshaft to the timing gears and to a sight feed on the dash. The

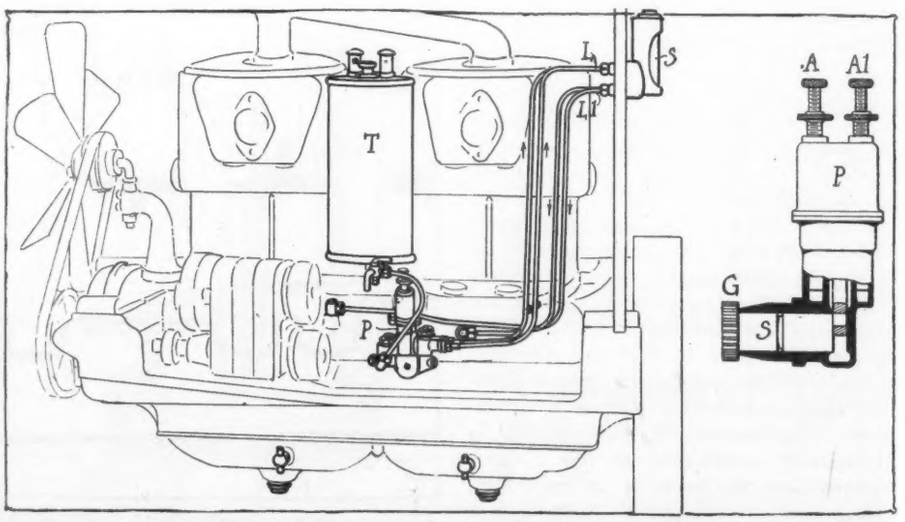


FIG. 10—PERFECTED PACKARD TWO-PUMP SYSTEM

crankcase has the usual oil compartments beneath each connecting rod and in which a splash level is maintained. Beneath the crankcase is a return oil pipe into which the overflow oil from each compartment drains and from which the exhaust oil pump, if we may call it such, draws the oil and returns it to the oil tank, where it passes through a strainer before being used again. By means of a bypass valve the flow of oil to the motor can be regulated. It will be noted in this system that there is but a small quantity of oil in the crankcase at any time. The splash set up within the crankcase feeds the cylinders and oil grooves from the cylinders to the pistons insure the distribution of the lubricant over the surface of the walls.

The Packard Pumps

We are now ready to dismiss entirely the circulating aspect of lubrication as found in the 1910 cars now on exhibition at Madison Square Garden. Now comes into consideration those different systems in which the lubricant is fed to the motor, but is not returned therefrom, the feed being regulated so that a constant level of oil is maintained in the crankcase. There is considerable variation in some of these systems in that not a few use the mechanical oiler containing its bank of plunger pumps, whereas others use but two or more plunger pumps and have not the mechanical oiler in the common acceptance of the term. In this latter class may be mentioned the Packard, illustrated Fig. 10. In this system the oil reservoir is a cylindrical copper tank T on the left side of the motor between the front and rear pairs of cylinders, a location which insures a uniform temperature of the oil. A pair of plunger pumps comprises the pumping outfit, both of them delivering the oil from the tank T through a pair of leads L to sight feeds on the dash, from whence it flows through other leads, L1, one to the front and the other to the rear compartment of the crankcase, in which a predetermined oil level is maintained. It is thus a straight splash system with the crankshaft bearings, connecting rods and cylinder walls supplied in this manner. The design of the two pumps P is shown at the end of the illustration, both being driven from the gear G of the camshaft. This gear is on a short pump shaft S, to which is attached the connecting rod that operates the two pumps. On the top of the pumps are adjusting screws, A and A1, by which the amount of oil per stroke of the pump may be varied. In the bottom of each crankcase compartment are threaded drain plugs, by which all oil may be drained, and higher up on the side of the crankcase are pet cocks for regulating the oil level in the compartments.

Peerless Plunger Pumps

On the Peerless cars a change has been made for this year in that the five plunger oil pumps which last year were located on the front side of the dash under the hood are now incorporated in the crankcase, so that the amount of piping is greatly reduced. The oil well or reservoir of these motors is incorporated in the crankcase at the left rear, where provisions are made and the plunger pump fitted, by means of which oil may be injected direct into the front or rear cylinder compartments. A three-way valve is provided to make this possible. The usual bank of sight feeds is furnished on the dash. A commendable feature in the Peerless motor is a small lever on the left rear motor arm, by means of which the drain cocks at the base of the crankcase can be opened, thus permitting of draining these compartments without the difficulty of getting beneath the motor in order to open the doors of the mud apron or perform other disagreeable tasks.

A third example of the plunger pump system is the Cadillac which has not been changed for several seasons. On one side of the motor is a cubical oil reservoir in which are two plunger pumps, one of which delivers oil to a sight feed on the dash and the other takes this oil and forces it to the rear compartment of the crankcase, where the connecting rod sets up the usual splash. In the side of this compartment is an oil groove which fills with oil and delivers it to the next forward compartment, where it is splashed and later sent forward until all four of the crankcase compartments are reached. On the bottom of each connecting rod is a scoop which dips into the oil well and forces oil to the lower connecting rod bearing.

The White Pump System

On the new White gasoline car a particularly efficacious plunger pump system of oiling is made use of. A single plunger pump is contained in an oil reservoir within the crankcase, this reservoir having capacity for 1 or 2 gallons of lubricant. This pump delivers oil to the two ball bearings of the crankshaft and from these through eccentric grooves drilled in the throws of the crankshaft the oil is delivered to the lower bearings of the connecting rods. The excess oil from these bearings overflows, forming the splash within the crankcase and which lubricates the cylinder walls and wristpins. A unique phase of the White system is an oil level valve by means of which when draining off excess oil the old and used oil is taken off and not the new and fresh product.

They Use Mechanical Oilers

Lastly comes a passing review of those cars using the conventional mechanical oilers. One in this class is the Franklin air-cooled type with the oiler located beneath the cooling compartment on one side of the motor. This oiler feeds to the motor parts. A new feature, however, is an auxiliary oil pump on the dash for use in the event of extra oil being needed in long stretches of hard going. By way of general improvement small grease cups have been substituted for oil cups wherever possible and at the base of the clutch lever as well as at the change gear lever, a new provision is made for oiling the spring pivot bolt.

On the Locomobile cars a slight change in the oiling system consists in the use of a new type of oiler which has been brought from its position under the footboard and placed immediately in advance of the left rear motor arm. The oil is fed to the crankshaft bearings and the crankcase compartments.

On the Thomas little six a mechanical lubricator is attached to the left side of

(Continued on page 42.)

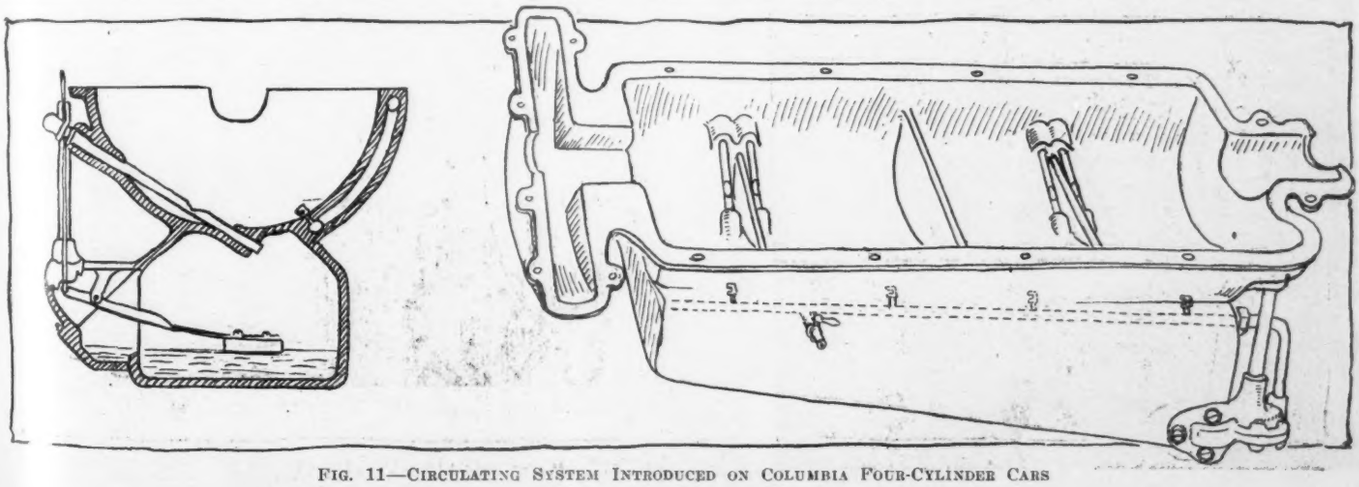
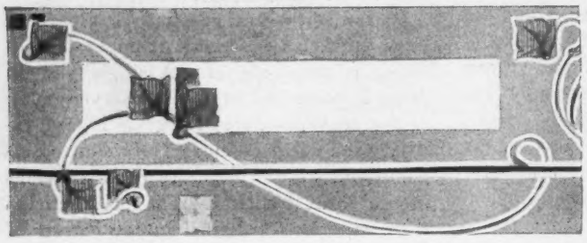


FIG. 11—CIRCULATING SYSTEM INTRODUCED ON COLUMBIA FOUR-CYLINDER CARS

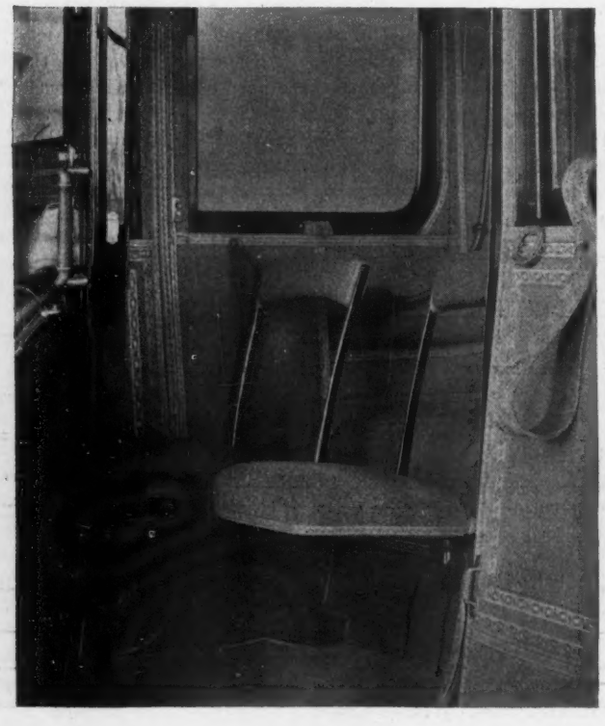
Garden Show Displays Varied Types of Bodies



IN looking over body designs it is sometimes hard to determine between toy-tonneau and five-passenger touring cars; in fact the booth attendants do not always agree in their nomenclature as distinguishing. Broadly speaking, they are just equal in number. Together they make up nearly one-half the bodies on the gasoline cars. If the five-passenger car be segregated from the toy-tonneau by virtue of having a straight dash, allowing the count of toy tonneaus to stand as having hooded dashes, then the former takes rank as having about two-thirds the combined number of these two body types. Each type follows the settled lines of 1909 with only three additions to the number, having low doors at the front-seat entrance.

Within two in number of the above body types comes the limousine, there being twenty-five of these or one-fifth the total cars shown with bodies. The prevailing color scheme is dark paint with light colored cloth upholstery inside and dark leather at the front seats. The multitude of interior fittings of 2 years ago has disappeared, so that today we have the dignity of normal conveniences and appointments. These include the electric deck light, a tube to the driver—in not one instance is there shown the multiple signal box attached to the dash—corded deck racks for hats, door pockets for small ar-

GLIMPSE INSIDE THE WHITE LIMOUSINE

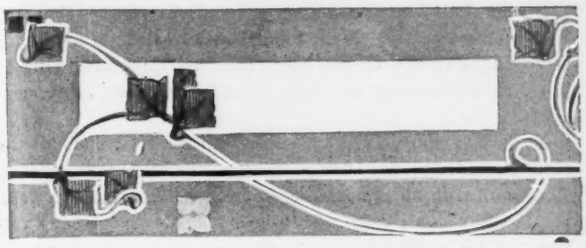


Luxurious Interior of the 1910 Packard Limousine

* *

Offering of the Stevens In the Limousine Line

Comfort For Tourists Aim of the Designers

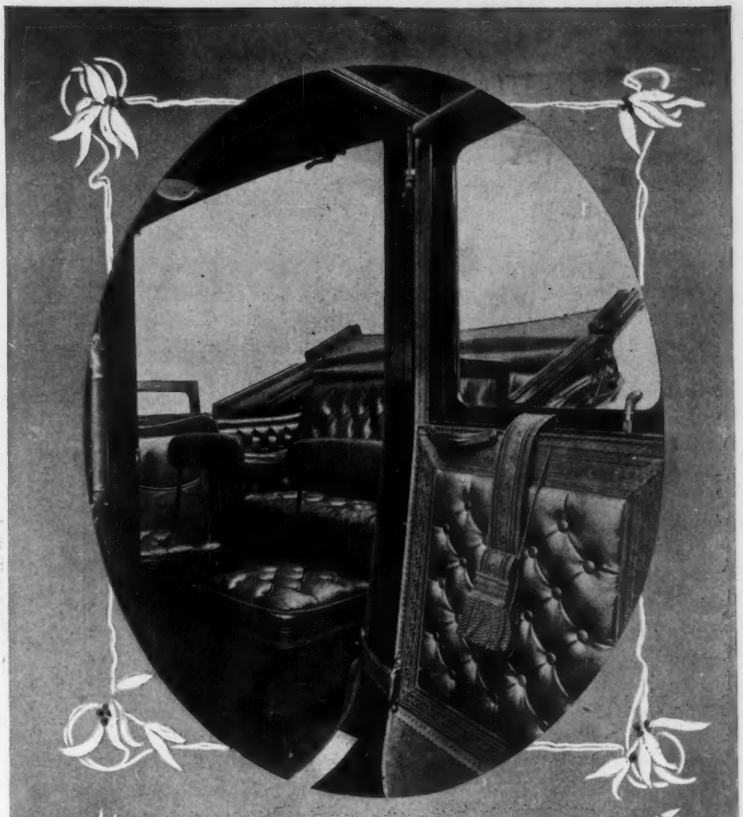


ticles and only now and then the small card and book rack on the panel back of the driver's seat. Folding opera seats are so general that in only two cars were drop seats found that mean riding backward for the user —and these were not on the lower-priced cars at that.

Drawers usually are to be found under the seat and the railed in top is the favorite point for baggage carrying, rear trunk racks having given way, probably because the undesirable strain at this point and further because it keeps the baggage freer from dust and mud.

The striking limousine of standard lines is a Packard painted in white with a conventional flower figure in colonial blue, repeated on the sides of the motor hood and the side and rear panels of the body. The repeated figure is placed in diagonal lines and separated in long narrow panels by thin vertical lines of blue. The motif is taken from the raised silk figure of the interior upholstery, this being of the same dark blue in the mass, edged at the door panels and seat rail lines by a border of the same design, the figures being blue with a silver background. All metal fittings of the car are full silver plated except the lamps, and these are enameled blue with the hoods and the lens rims plated.

The only example of a four-door limousine that is with the driver's seat fully enclosed is also in the Packard



Packard Landaulet with Rear Portion of Top Down

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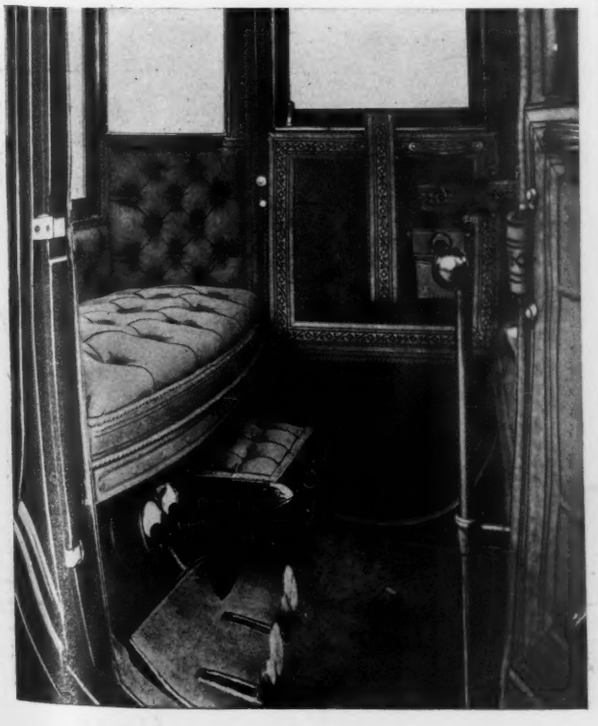
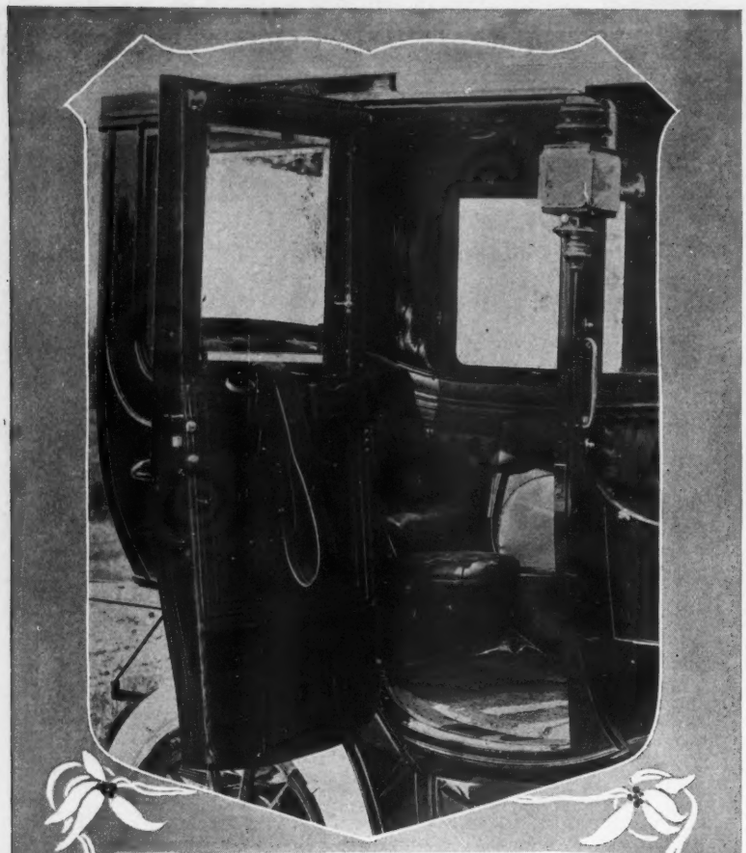
Stevens-Duryea Limousine is Luxuriously Finished

AN ELECTRIC IDEA—A WAVERLEY INTERIOR





Interior of the Modes R Stevens-Duryea Limousine

Showing Seating Arrangements Inside the 42-horsepower Franklin

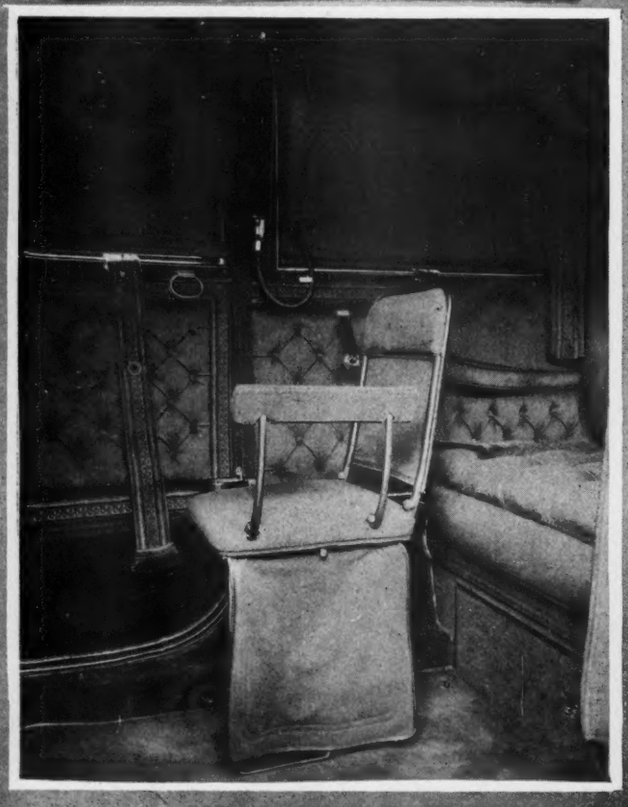


exhibit. The color scheme is in chrome yellow, lake and black; the larger panels carrying the yellow, the smaller panels the lake, and the trim, both large and small, being in black. Beyond the striking color scheme, the body lines are in keeping as they break up any solid lines, thus giving the color work an added character. When the panel back of the front door joins the forward stile of the rear door the panel curves in slightly, and then the lines come out square to make the stile. This also adds to the appearance of the roof, the side lines following in part, thus breaking up what would otherwise be a mere mass.

There are only five landaulets, all of conventional design excepting one shown in the Pierce-Arrow exhibit. This is of the old English stage coach lines, with a folding leather peak over the driver's seat that comes forward of the wind shield. There are also low doors at the driver's seat. The interior is upholstered in a mottled oak colored Cordovan leather. In addition to the usual fittings there is a drop hand bowl with a towel shelf above the door of which lifts up and becomes a mirror. The extra seats are each different, that in the left being a flat folding seat and that on the right a full opera, with a bowl under the seat cushion. Both this and the hand bowl are supplied with water from two large tanks under the floor, heated from the exhaust. The pressure for these tanks also is created by the engine and passes through a pressure tank under the running board. Under the rear seat is a full thermos outfit for foods as well as for liquids, also linen lockers. The running boards on each side are flush with the chassis lines, thus giving large and deep storage lockers for gas and air tanks, for tools and other uses. This has brought about a need for an intermediate step, between the ground and the high level of the running board top, which is hinged and automatically drops and folds up as the door is opened or closed, being applied to both side doors. At the rear is a three-stack trunk rack, a fourth trunk being provided for within the railing of the forward part of the top. The color scheme of the body is chrome yellow with the panel rails in black.

Of seven-passenger touring cars there are seventeen and of runabouts ten, each of normal body design. From this it will be seen that the craze of last year for run-

A Glimpse Inside the Peerless

abouts has dropped and the count of toy tonneaux indicates in which direction to look for this change. The seven-passenger touring cars are, of course, all round standards and are really shown as a twin to the limousine, it being pretty general practice with buyers of this type to take a chassis with a body of each kind, thus giving a summer touring car and a winter town car at an economy of purchase outlay and garage needs.

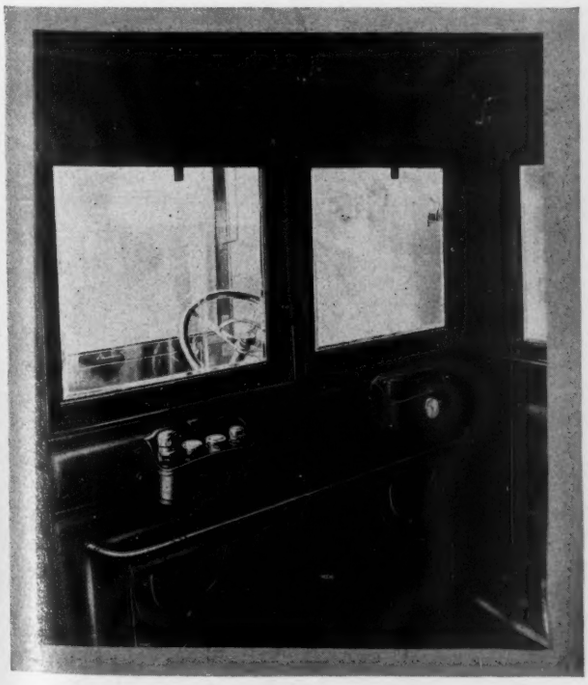
Strange as it may seem there are the same number—5—of surrey-seated cars as of landaulets, but the condition is one of holdover more than anything else if one pries deep enough into the situation.

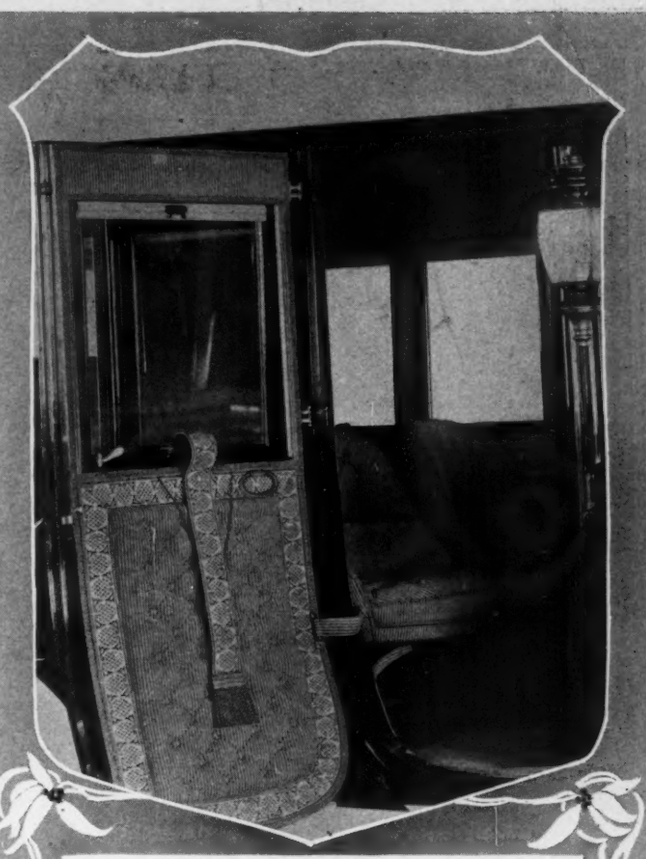
That the excellencies of the inside drive coupe, as proved by the electric cars, has not been taken advantage of must be admitted as a disappointment, only one car of this design being on view in the gasoline section. This is an Overland. The long try-out that the electric cars have given this type has brought it to an excellent all round design that is well and fully carried out in the Overland example on view.

That body which has been termed torpedo, gunboat and various other descriptive terms, makes up in interest what it lacks in numbers, there being only eight shown. The type can be fairly divided into two groups, one in which the touring car has been amplified by carrying the sides through the dash, keeping the top rail line of the rear doors through this line. The other group has not held so much to the general outline, but has introduced side, rear and front lines that give a distinctive appearance, though time only will tell whether or not they will be the ruling favorite against the more conservative other type.

One of the problems that is admittedly not yet worked out to the satisfaction of those who are working on this type, is the placing of the levers, whether inside or out or divided, the change speed within and the brake lever without. Of the eight cars shown four have both levers inside, three have them outside and one has them divided as above. The real solution is one that must come from practice, and in England, where this type of body has had longer and greater vogue, they are yet not a unit on lever positions. As the whole scheme is to make the body one that fully encloses the passengers perhaps it is natural to think of the levers as both inside. This

Conveniences Found in the Peerless





Suburban Type Limousine of the Pierce-Arrow Line

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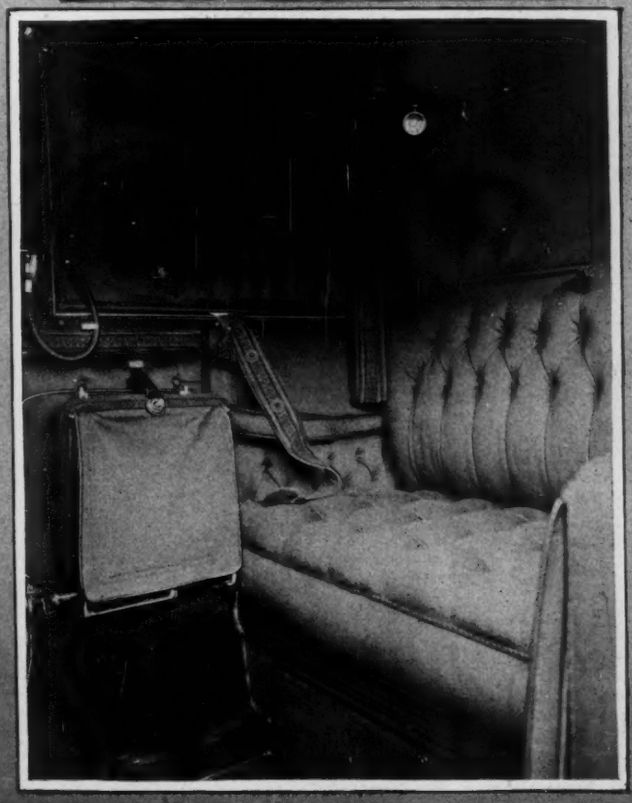
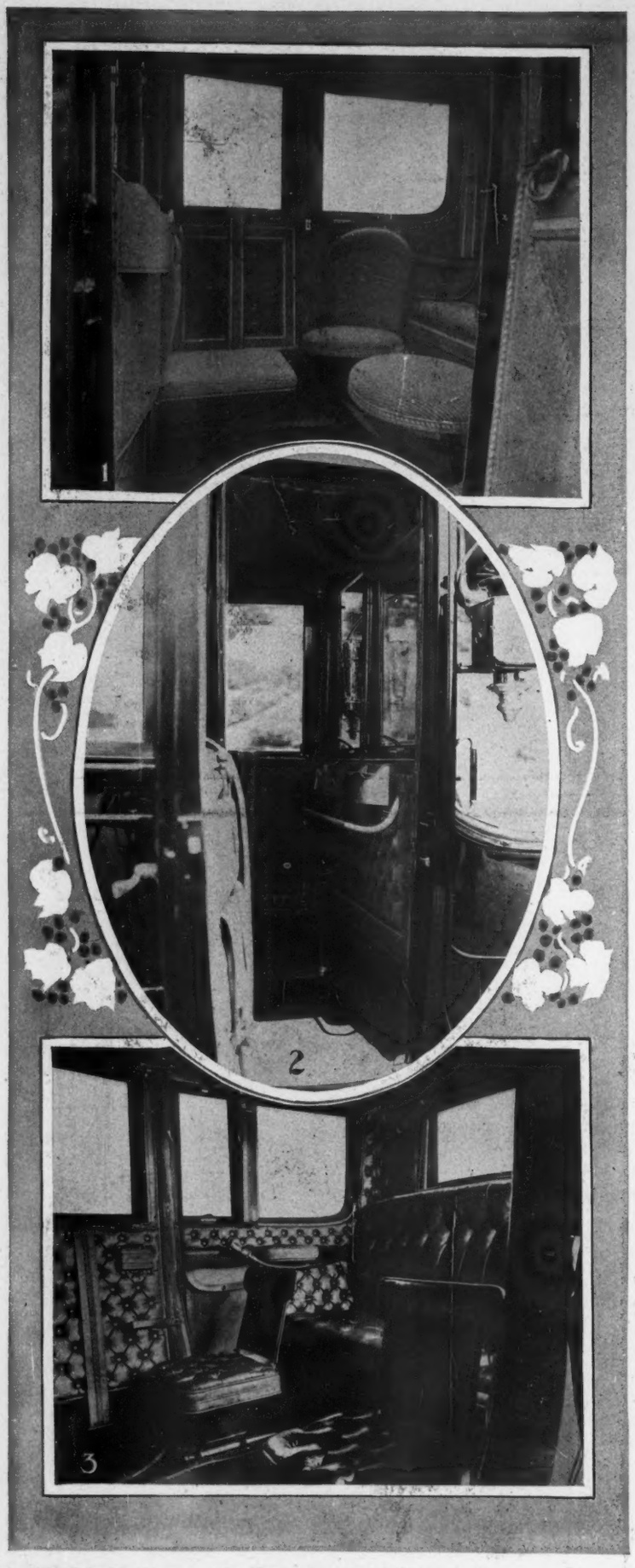
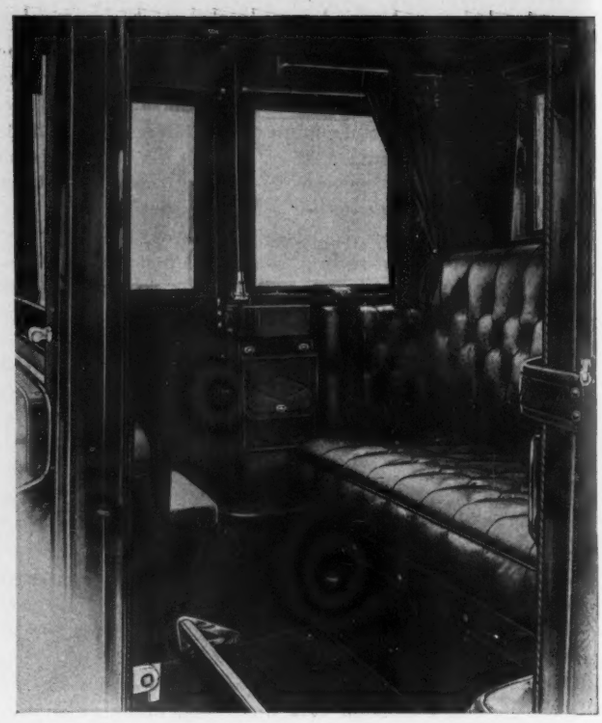
Comforts Offered in the 1910 Franklin Limousine





1—An Interior View of the Model R Thomas
2—Oldsmobile Limousine as Seen from Without
3—Inside View of Locomobile 30 Limousine



Looking Into One of the Stoddard-Daytons

being the case some of the bodies shown will have to be widened at the front, as the levers are now too close in toward the steering column for ease of manipulation, and again others have their brake lever so near the wall of the side panel that the latter ought to be lined with plush if there is to be a saving of the cuticle of the operator. It is a thought that has come to more than one that with the left hand drive and levers in the center of the floor, or right hand manipulation, the torpedo body will have one of its points settled. On the other hand, one cannot see wherein there can be any objection to carrying the side lines of the cars out in a more sweeping effect and thus give the needed hand room for lever manipulation as now placed. Bodies have been produced on these lines and they are effective in appearance as well as effective in purpose.

The Knox, Winton, White, Franklin and Selden models are of the type that might be termed moderate, with the Palmer-Singer more of the warrior type and the Royal between the two. The Palmer-Singer distinctly suggests a cock-pit in its full rail with a narrow door on the left in front and a single door at the right for the rear. The effect is further marked by the left front seat, which revolves so that its occupant can face the rear. The back of this body is carried particularly high

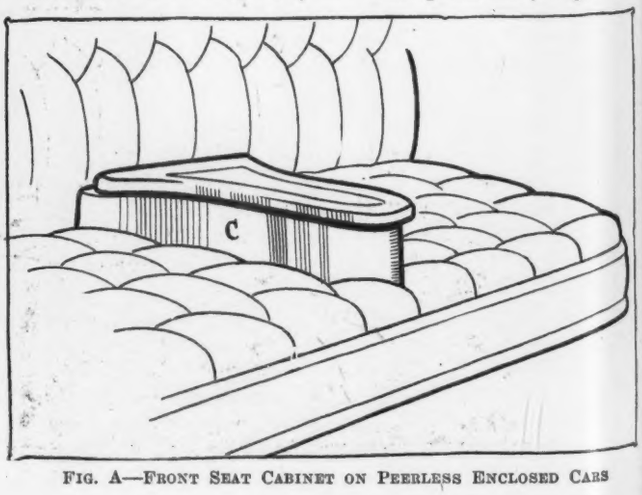


Fig. A—Front Seat Cabinet on Peerless Enclosed Cars

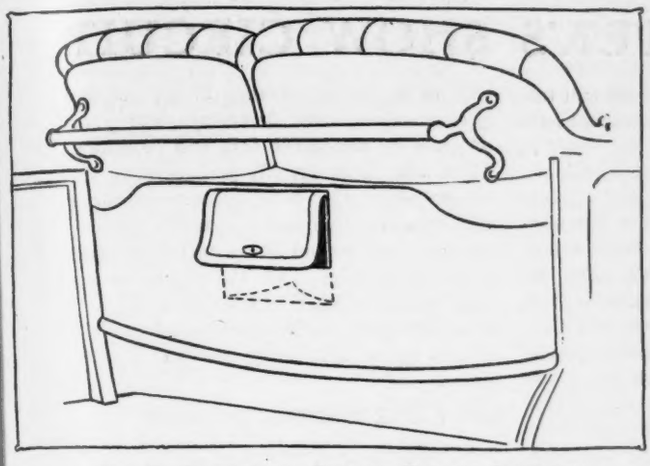
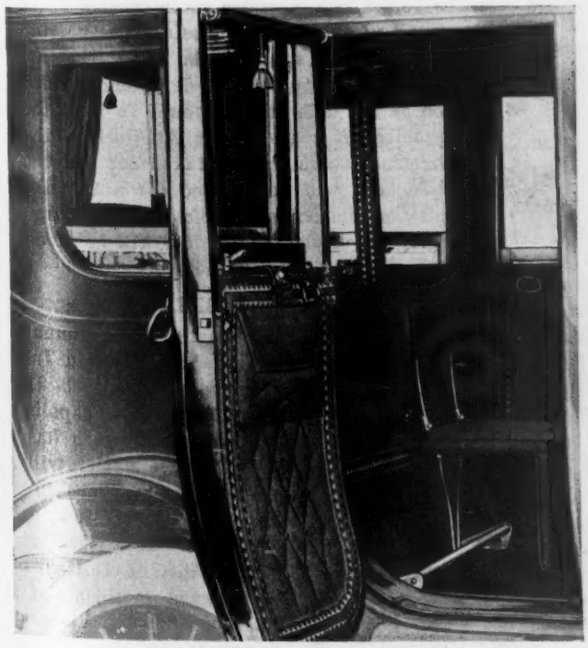


FIG. B—POCKETS FOR GOGGLES, ETC., IN OLDSMOBILE

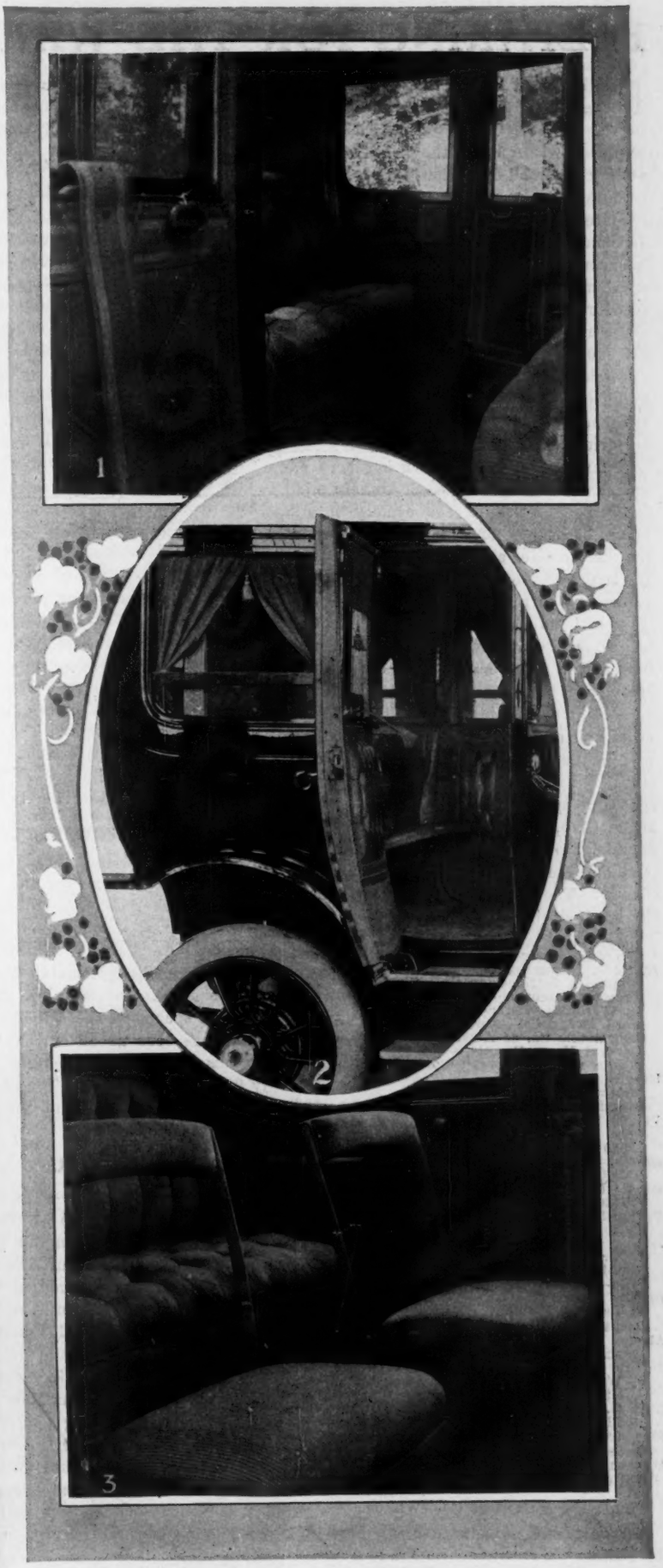
and sweeps outwardly towards its base, giving a locker at this point. The Royal Tourist is rather full bodied and the tank is carried back of the swelling rear line of the front seats. The Franklin bears the name plate "Torpedo" and effect is given by using a Renault design of motor bonnet over the six cylinders. The other cars named are all pleasing in their lines and suggest most excellent comfort in touring at any time of the year, the sides being kept well up and the seats somewhat low, comparatively, yet not too much so for touring comforts and pleasures.

At this time the above covers the torpedo-gunboat body tabulation, but it is stated that others are expected before the show closes, they having been delayed in shipment by virtue of the present freight situation, due to the weather of two weeks ago.

To show how every possible nook and corner is being utilized this year, attention is called to the two sketches. In Fig. A, the front seat of a Peerless enclosed car is shown, with a triangular compartment C separating the two front seats. This is very convenient for the chauffeur, as it enables him to keep such tools and small articles as are often needed in a readily accessible place. Facilities are also provided for carrying goggles and other breakable articles in the tonneaux of Oldsmobile touring cars, as shown in Fig B, which may be found useful by the occupants of the rear seat.



AS THE STODDARD LIMOUSINE LOOKS INSIDE



1—INTERIOR VIEW OF MODEL F THOMAS FLYER
3—INSIDE OF THE STUDEBAKER B 40 LIMOUSINE
2—A PEEP INTO THE STEVENS-DURYEA MODEL Y

PREPARING FOR THE WINTER'S SHOW CIRCUIT

PHILADELPHIA, PA., Jan. 10—Next Saturday night the ninth annual show of the Philadelphia Automobile Trade Association will open in the Third Regiment armory at Broad and Wharton streets. The building is so small that in order to accommodate all the applicants for space an extension of the show for an additional week became absolutely necessary. The first week will be devoted to gasoline and steam pleasure cars only, and there are a sufficient number of these exhibits to not only fill every available inch of space, but to necessitate some of the late applicants going over to the second week, when electrics, commercial cars, motor cycles and accessories will hold forth.

A large corps of workmen has been engaged since early last week transforming the bare interior of the armory into a bower of beauty, of which blue and white will be the color scheme. When completed the impression of an outdoor exhibition of motor cars is the effect which the decorators will have produced, with the box ledges, lattice-work walls intertwined with flowers and green burlap floor covering to carry out the idea. The aisles will be marked by Corinthian columns topped with vines and ornamental plants. The gallery will be devoted to the use of the local clubs for reception purposes, separate spaces being set apart for the Quaker City Motor Club, the Automobile Club of Philadelphia, the Automobile Club of Germantown and the Automobile Club of Delaware County. The following exhibits will hold the stage during the first week:

Stoyle-Vogel Auto Co.—American.
Bergdoll Motor Car Co.—Bergdoll cars and taxicabs, Thomas and Mercer.
Chadwick Engineering Co.—Chadwick.
Prescott Adamson—Columbia and Reo.
Gawthrop & Wister—Elmore.
Ford Motor Co.—Ford.
Locomobile Co. of America—Locomobile.
General Motor Car Co.—Lozier.
Matheson Automobile Co.—Matheson and Everitt 30.
Maxwell-Briscoe Co.—Maxwell.
Standard Motor Car Co.—Middleby and Velie.
Penn Motor Car Co.—Mitchell.
Tiogo Automobile Co.—National and Hupmobile.
Olds-Oakland Co. of Pennsylvania—Oldsmobile and Oakland.
Packard Motor Car Co. of Philadelphia—Packard.
Auto Sales Corporation—Peerless and Cadillac.
W. J. Sprankle—Marion and Overland.
Foss-Hughes Motor Car Co.—Pierce-Arrow.
West-Stillman Motor Car Co.—Pope-Hartford.
Motor Co.—Premier.
Longstreth Motor Car Co.—Pullman and Alco.
Thomas M. Twining Co.—Regal-Detroit.
Hills Motor Car Co.—Royal Tourist.
D. Walter Harper—Stanley steamers.
G. Hilton Gantert—Stearns.
A. G. Spalding & Brother—Stevens-Duryea.
Stoddard-Dayton Auto Co. of Philadelphia—Stoddard-Dayton.
Studebaker Brothers Co.—Studebaker and Studebaker-Garford.
White Co.—White steamers and gasoline cars.
Winton Motor Carriage Co.—Winton.

All the above concerns are members of the Philadelphia Automobile Trade Association. A score or more of non-members have been compelled to take second-week spaces. These with the electrics, commercials, motor cycles and accessories will tax the capacity of the armory for the last half of the show, it is anticipated.

CHICAGO SHOW PLANS

Chicago, Jan 10—Exhibits for the Chicago show, February 5-12, will begin arriving the latter part of next week. For the past month work has been progressing on the decorations, which this year will imitate a forest. Scouts have been engaged to scour the adjacent suburbs for trees and branches to be used in the effect. The entire scheme will be different from anything ever before attempted. The most massive scenic piece will cover the entire roof of the Coliseum. This will be a forest with the blue sky in evidence in spots. This canvas will be 300 feet long and 180 feet wide and is being made in thirteen strips. Manager Miles reports that the applications which must be rejected on account of the lack of space are greater this year than ever before, indicating the large number of firms which have had their birth during the past year. These include not only accessory concerns but also manufacturers of cars. The motor cycle feature this year is to be one of the most interesting of the show. The motor cycles will occupy the entire second floor of the Annex. The exhibition of electric vehicles will be another big feature.

MINNEAPOLIS PROSPECTS

Minneapolis, Minn., Jan. 10—Main floor space at the armory for the Minneapolis show, February 19-26, has all been allotted. Although it is a long time ahead of the opening date Manager Walter Wilmot, of the Minneapolis Automobile Show Association, has made contracts for the entire exhibition spaces on the drill floor. The demand has been ahead of that of previous seasons, which gives promise of an unusually fine general exhibit. The accessory men are also eagerly taking up the gallery and basement show section.

CINCINNATI GETS BUSY

Cincinnati, O., Jan. 10—The annual show of the Automobile Club of Cincinnati, to be held at Music hall in this city, February 21 to 26, will be of much more importance than passing notice would indicate, for sixty types of cars will be exhibited. Dr. A. B. Heyl, representing the Ohio State association, and Dr. L. S. Coulter, representing the Cincinnati Automobile Club, are now at the New York show with a view of gaining points to add to the attractiveness of the Cincinnati event. The demand for space has exceeded early anticipations until almost every available foot of floor space has been contracted for, the moving picture feature having been sacrificed to allow space for some of the concerns that could not be accommodated in the original allotment which was made last Monday. The first and second floors will have the appearance of an outdoor garden scene, with driveways and plots of grass on which the cars will be shown. There will be an artistic pergola down the center aisle, the color scheme overhead will be a sky blue, and suspended between the first and second floors will be several types of airships. All the signs for the different exhibition spaces will be uniform transparent electric ones and the hall will be aglow with many thousand electric bulbs.

ONLY ONE ROCHESTER SHOW

Rochester, N. Y., Jan. 10—What promises to be the biggest show ever given in Rochester will open in Convention hall Monday night, February 14. Last year there were two shows held in Rochester. This year the two shows are to be combined, all of the dealers having entered one association. Captain C. A. Simmons has been made manager of the show. The executive committee is composed of W. C. Barry, Jr., president; A. V. Hart, secretary; R. M. Searle, J. W. Jenkins, J. J. Mandery, F. W. Peck, C. E. Sager, C. E. Hartson, F. C. Schutt, A. M. Zimbrich and J. R. McKenney.

OMAHA STARTS SHOW WORK

Omaha, Neb., Jan. 10—Omaha dealers have organized for the show and subscribed stock in the enterprise which will be held in February. The following officers of the show association were elected: President, J. J. Deright; vice-president, J. T. Stewart; secretary and treasurer, Clarke G. Powell; board of directors, J. J. Deright, Clarke G. Powell, William Hosford, J. T. Stewart and T. R. Kimball. Mr. Powell and Mr. Hosford were appointed a committee to manage the show. Twenty applications for membership were received from new dealers in Omaha. There were also several requests from outside factories for space at the show. The last week in February was definitely decided on as the date of the show. To meet the problem of space in the Auditorium, the immense stage will be taken out and the basement will be utilized for a fine display of commercial vehicles while the large corridors of the second floor will be given over to outside manufacturers.

DEALERS REORGANIZE

Indianapolis, Ind., Jan. 10—The annual motor car show will be conducted in Indianapolis during the week of March 21 and will be promoted by the Indianapolis Automobile Trade Association, which has just been reorganized. Each dealer will exhibit in his own salesroom. Plans include a street parade, novelty races and a banquet on Saturday night. At a meeting a few days ago Fred I. Willis, of the Hearsey-Willis Co., was elected president of the club; Frank L. Moore, of the Fisher Automobile Co., treasurer, and Frank B. Willis, of the Willis-Holcomb Co., secre-

tary. Committees for the show have been announced as follows:

Executive and finance—F. I. Willis, chairman; F. B. Willis, secretary, and Frank L. Moore, treasurer; Frank Staley, Studebaker Brothers' Indianapolis Co., and Donald J. Hayden, Indiana Motor and Mfg. Co.

Entertainment—F. Staley, chairman; Will H. Brown, Overland Automobile Co.; C. E. Gamble, F. W. Kohl and J. P. Smith.

Street events—D. J. Hayden, chairman; H. N. Freeman, Finch & Freeman; George A. Weidley, Premier Motor Mfg. Co.; R. J. Irvin, R. J. Irvin Mfg. Co., and G. H. Hamilton, G & J Tire Co.

Press and printing—Arthur R. Kling and G. W. Stevens.

Parade—Paul Smith, Indianapolis Motor Car Co.; Frank Menthorne, Buick Motor Co.; Frank Leary, Foster Smith and Arthur J. Gardner.

BALTIMORE WORKING HARD

Baltimore, Md., Jan. 10—The committee which will look after the arrangements of what promises to be the greatest show ever held in Baltimore consists of President G. Howard Milliken, of the Automobile Club of Maryland, president; Thomas B. Hutchison, assistant chairman; Dr. H. M. Rowe, Thomas G. Young, Joel Nassauer and H. M. Luziers. President Millikin, as chairman of the show committee, will have his headquarters at his office, 914-916 Equitable building. One of the new features of this year's exhibition, as far as Baltimore and Baltimoreans are concerned, will be the exhibits of aeroplanes and balloons. More exhibits from other states, as well as from different sections of Maryland, are expected by members of the show committee. The floor plan has been laid out by Assistant Chairman Hutchison and within the next week or so members of the show committee will meet the dealers at the club rooms and drawings for positions on the floor will be made. One of the methods of the show committee in looking after new features has been to send representatives to the different out-of-town shows in quest of new ideas which will be introduced in Baltimore.

MILWAUKEE SHOW PLANS

Milwaukee, Wis., Jan. 10—The Milwaukee Automobile Club has begun to arrange the preliminary arrangements for the second annual show to be held in the Milwaukee Auditorium from February 22 to 27, inclusive, now that space has been sold out and the financial success of the event is insured. The demonstrating cars will be given the use of the Fifth street side of the Auditorium. All three entrances will be used to accommodate visitors. The Cedar street entrance will be used for those who attend in cars and carriages. The State street side is reserved for exhibitors. Electric arches will span Fifth street from Cedar street to Grand avenue. The show will open on the evening of Washington's birthday and remain open until midnight of Sunday, February 27, in order to give the employes and experts of the various motor car manufacturers in Wisconsin an opportunity to see the exhibition. The entire ground floor or arena of the main hall will be devoted to motor car exhibits; the basement to trucks, delivery and mail wagons, ambulances and other commercial vehicles; the smaller halls to motor boats, marine engines, sportsmen's goods and accessories. The demand for space is good.

Indianapolis Proposes Outdoor Speedway Show

Indianapolis, Ind., Jan. 10—Carl G. Fisher, president of the Indianapolis Motor Speedway Co., has taken up with a number of motor car manufacturers the question of a national motor car show to be held at the speedway during the coming fall. The proposal is receiving the careful consideration of a number of the best known manufacturers and other tradesmen of the country. Fisher's plan is for an outdoor show, the exhibits to be made in the tents, with the speedway course offered as an additional attraction for demonstrating cars to prospective purchasers. He believes that many manufacturers will agree with him that the Chicago and New York shows should be made largely local affairs, with the Indianapolis show the national event of the year. Last April twenty-five leading manufacturers visited this city, few persons knowing of their presence in the city. They were principally representatives of the unlicensed manufacturers and even went so far as to draw plans for a main display building to be erected on the speedway grounds for show purposes. Fisher believes that the show, such as is proposed for this city, would mean a large saving in expense to manufacturers now showing in two or three different cities.

PORTLAND'S BIG SCHEME

Portland, Ore., Jan. 8—Final plans for the decoration and arrangement of the armory during the Portland show, to be held under the direction of the Automobile Club, January 24 to 29, have been submitted to the manager, Will Lipman, and his assistant in charge, J. M. Rieg, by the scores of artisans who have been engaged on them for some time past. Already the sculptors have commenced work on bas relief statuary, columns and enclosures, which will be one of the principal features of the decorations. Winged Mercuries, perched upon 16-foot columns placed uniformly about the exhibit hall, is a special idea not heretofore brought out in any show. One of the big features will be an immense painting and mechanical arrangement depicting a mountainous highway scene along the Rhine in Germany. A great touring car is seen making the ascent. Around each of the bas relief columns a huge basin of the same material is being constructed, and these will be filled with palms and flowers. Green burlap will carpet the floor. Outside of the trellis garden idea the decorative scheme involves a lattice and landscape effect, with the whole set forth by hundreds of glittering lights and huge chandeliers of electric balls of fire, which will throw the pictoral scenes and the cars into high relief. Music will be furnished by two bands during the entire show. No less than $10,000 will be spent on decorations.

FINANCIAL SUCCESS CERTAIN

St. Louis Mo., Jan. 10—The St. Louis show will be a success financially even before the doors of the First Regiment armory, where the exhibits are to be made, is opened to the public February 14. This announcement was made by the committee of the Manufacturers and Dealers' Associtaion, which has charge of the project. Every foot of space has been sold, and, although the armory contains 25,000 square feet of floor room, it is not half so large as the exhibitors would have liked had they been able to receive the amount of space they asked for. Owing to the fact that many were compelled to accept smaller space than they thought they were entitled to and that some were unable to obtain space at all in the armory, there is a movement on foot to hold a separate show in the Coliseum. This second scheme will not be worked out for a week or so, and it is possible it may be abandoned. However, even those who are in charge of the regular show say a second one would in no wise injure theirs and admit it would help advertise the industry. The decorations for the hall will cost $1,500, the contract having already been let. The show committee has announced that it will be able to take care of virtually all the accessory exhibits that will come here. The total number of individual exhibits in the armory, so far as arranged, will be seventy-five. These exhibits will consist of about 200 cars of various types, besides many accessories.

CLUB IS AN ACTIVE ONE

Detroit, Mich., Jan. 10—At the coming show of the Detroit Automobile Retailers' Association the Detroit Motor Club will make a systematic effort to bring to a successful climax the movement for a club organization of 1,000 members. Secretary John Gillespie will be in charge of a booth reserved for the club at the show, and boomers will be circulated on a systematic basis. The club recently has received notice of its admission to the Michigan State Automobile Association and is employing this as a strong lever to increase its membership. The Michigan association has been very active this fall, having held several meetings and already having mapped out a route between Detroit and Grand Rapids, the two largest cities of the state. This route will be fully equipped with signboards and directions in the spring and the move, it is believed, will redound greatly to the tourists of the state metropolis and the commonwealth's second city.

Studebaker Case Comes Up Again

CINCINNATI, O., Jan. 10—The case of the Studebaker company against the Everitt-Metzger-Flanders Co., of Detroit, Mich., came up this afternoon before United States Circuit Judge John W. Warrington. The case involves a contract whereby it is alleged that the Studebaker company was to have paid a total of $46,200,000 to the E-M-F concern for a period of 3 years and that during that time the E-M-F company agreed to sell no cars to any other than the Studebakers. The Studebakers claim to have spent $1,000,000 in advertising the E-M-F cars and establishing agencies all over the country. Then a disagreement arose, it is claimed. Today's action was to secure a temporary injunctions until the final hearing of the case to secure the fulfillment of the contract which the Studebakers claim the E-M-F concern had made with them could be heard on its merits. The case originated before the United States circuit court at Detroit and was transferred to this city. Judge John W. Warrington declined to hear the case because, as he stated, the case had been brought in the court at Detroit and there had been no occasion in his judgment for the case being brought before him.

The Detroit Angle

Detroit, Mich., Jan. 11—The result of Judge Warrington's decision at Cincinnati refusing to allow the injunction to issue, is taken here to put the E-M-F-Studebaker argument up to the case which is now in progress before Judge Swan in the United States court in this city, in which the Studebakers announce that they are prepared to fight for the privilege of exclusive selling rights to a finish. In this case they not only ask a permanent injunction, restraining the E-M-F from selling to other parties, but also ask damages amounting to "$2,000 and over" as the result of the repudiation by the E-M-F of the contract which had existed for the sale of E-M-F cars to the Studebakers exclusively.

The local case is now the only one on the books in which the Studebaker appears as complainant. There are, however, two suits pending in the Wayne county circuit court at Detroit, one seeking to oust the Studebaker representatives on the E-M-F directorate, while the other seeks to dissolve the pool of stock, in order to permit the votes of the E-M-F contingent, in obvious preparation for the election of a new board of directors which will not include Messrs. Fish, Eames and Studebaker, it is understood.

A feature of the week has been the filing of a supplemental answer in this suit by the E-M-F. It will be recalled that, when the suit was started, it was agreed by both sides that the documents filed for and against the original request by the Studebaker company for an injunction should stand in the trial of the combined suit for injunction and damages. The E-M-F in its supplemental answer has filed a number of affidavits from prominent manufacturers of Detroit and elsewhere, attacking the Studebaker policy which allowed but 10 per cent margin for the retail dealers. W. C. Durant, general manager of the General Motors Co.; M. L. Pulcher, of the Oakland Motor Car Co.; Robert C. Hupp, general manager of the Hupp Motor Car Co.; W. C. Leland, of the Cadillac Motor Car Co.; J. B. Bartholomew, of the Glide; I. R. Palmer, of the Cartercar; Benjamin Briscoe, of the Maxwell; Fred W. Haines, of the Regal, and Frank Briscoe, of the Brush Runabout Co., all swear that they know of no instance in which a manufacturer has been able to successfully market his product, when allowing agents a profit of but 10 per cent. In general the manufacturers mentioned state that the profits allowed their retailers approximate 20 per cent, the ratio varying slightly with the number of cars handled by the dealer.

These affidavits the E-M-F uses to prove its right to the stand that the Studebakers were attempting a dangerous policy in attempting to distribute the E-M-F cars on such a basis, this 10 per cent being the maximum profit which was possible to the average distributor. The fact that rival manufacturers have been ready to file affidavits is believed to indicate that they will be ready to appear on the stand when the case comes to a trial, supporting their affidavits by testimony regarding the relations between manufacturers and dealers.

Of particular importance in this connection is an affidavit from Harry Cunningham, at one time a race driver in the employ of the Packard, but later the manager of the local branch of the Ford Motor Co. Cunningham swears that the Ford company attempted for one season to market cars on a basis of 10 per cent profit to the retailers, but says that the firm was forced to abandon this policy. Cunningham is now assistant sales manager of the E-M-F under the revised system of sales.

The E-M-F Co. also sets forth that it failed to realize the importance of its contract with the Studebaker Automobile Co. at the time the agreement was entered into and excuses its action in declaring the contract invalid by the statement that it saw ruin staring it in the face when the full consequences of the agreement became evident. It is denied, however, that the Studebakers ever secured exclusive right to the sale of E-M-F cars and it is pointed out that the contract lacked mutuality. The statement of the Studebakers that they spent $500,000 in exploiting E-M-F cars and establishing agents is also denied, the answer stating that the Studebakers secured their agents chiefly through the former affiliations of the dealers with the E-M-F.

Walter E. Flanders, president of the E-M-F, denies that he was the one who suggested the proposed $80,000,000 merger, as related by the Studebakers in their bill of complaint, stating that he rejected the offer when it was made by Frederick C. Fish, as being unfair to the E-M-F stockholders, in that, according to the plan as outlined, the E-M-F would have to pay dividends on a capitalization of $80,000,000. This merger is much dwelt on in the answer in which it is set forth that every advance came from the Studebakers, only to result in a repulse by the E-M-F management.

Mr. Flanders also produces another affidavit in which he swears that the Studebakers injured the reputation of the E-M-F output by putting the "Studebaker" in large letters above the letters "E-M-F" in the name plate of the cars as sold. He also narrates how he was dissuaded from producing a coupe model of the E-M-F car for winter use by representatives of the Studebakers, being later called on to accept the return of a number of enclosed bodies from the Studebakers' New York branch, representatives of which told him that the bodies could be procured cheaper elsewhere. These bodies, it is asserted, were furnished by the Studebakers direct.

It is further asserted in the E-M-F answer that the Studebakers had no right to consider that their contract contained selling rights for the Studebaker-Flanders 20-horsepower car, and enumerates the enlargements which the Studebaker representatives induced his firm to make in its main factory to the expenditure of over $400,000, which was undertaken on the basis of a sale of all the cars which could be built, to the Studebakers. The necessity for storage of E-M-F cars which the Studebakers refused to take is listed in a bill for $10,000.

The Studebaker company, through General Manager Eames, has issued the following statement, which has been sent to the Studebaker agents:

The unfortunate condition now existing between the E-M-F company and ourselves has reached a point where we believe a statement from us is justified—we have consistently refrained from a newspaper controversy. Our contract with the E-M-F company, made in April, 1909, to be effective for 3 years from September 1, 1909, provides for us to be the sole distributors of the product of the E-M-F factories; that if at any time we should not have on order with the E-M-F company 1,500 cars for the ensuing 4 months, the E-M-F company could call a meeting of its board of directors and consider retrenchment or exploitation, or that we could remedy the difficulty, if we choose, by orders, which right was reserved to us. There has been no such meeting held, nor the acts of the officers of the E-M-F company ratified by official action of its board, nor that condition been broken by us, nor do they so claim. In all the preliminary negotiations leading up to the contract of April, 1909, the question of our obligating ourselves to take a specified number of cars for a given year in monthly quantities was discussed and we definitely and positively refused to do so, except to the extent of 1,500 in 4 months, as above set forth. This was and is well known to the officers of the E-M-F company.

In August a prognostication or estimate of the approximate number of cars needed for the year September 1, 1909, to September 1, 1910, was made, the number being fixed at 15,200. The factory production of that number was fixed per month 1,000 for September, October, November, December, etc., in the form of a schedule. It was never intimated to us that such schedule was intended as a contract on our part, the same having been made without the knowledge of our officers, and never received in any way our official sanction.

On November 30 last, we were asked to take

742 cars which the E-M-F company claimed were produced over the number actually taken by us. On December 3 a conference was had in Detroit at which the necessities of the factory were shown to us and we agreed to give them immediate relief, asking time for our company to take official action owing to the large amount of money involved, and that was agreed to by them. On December 6, a letter was sent us insisting that the abovementioned schedule was a contract and asking us to specifically state whether we would take care of the cars as per schedule during the entire year.

On December 8, on authority of our board, we placed a lump order with the E-M-F company for immediate shipment for 715 cars, which made on order then with the E-M-F company from us over 1,000 cars for immediate shipment. On December 10 we received their letter of December 9, recently published, and also then learned that they had refrained from shipping cars on our order since November 30, which we construe to indicate that some of the people connected with the E-M-F company were contemplating and scheming to accomplish what has been done. We have ordered of them from September 1 to December 7, over 3,000 cars, and now have fulfilled past due orders for over 1,200 cars. They have hired the head of our publicity department and also his assistant and stenographer and some employes of our branches.

Their letter of December 9 was apparently framed for publication and its later publication was an act from the standpoint of good business fairness and dignity we refuse to characterize, leaving the public to judge. We have received many messages indicating that fair-minded business men who are accustomed to square dealing, deprecate the publishing of that letter and are not impressed with their covert and open attacks upon our reputation and good name, and we shall continue to take the dignified course consistent with our past career of not getting into a public controversy; our only recourse being to invoke the aid of the courts to sustain us in our rights or recoup us in damages, and we expect to use continuously every legal means and remedy which our counsel advise. We feel justified in assuming that the public and our agents and dealers, with whom we have had business relations for so many years, have the utmost confidence in our fairness and integrity and will not be affected by any attacks upon which show on their face maliciousness.

We are especially solicitous of our agents and dealers and believe that a frank statement of the situation is due them. Therefore you are requested to communicate this information to them at once.

Members of our company own over one-third of the capital stock of the E-M-F company; a number of stockholders of the E-M-F company with whom we have been in association heretofore inspired our confidence as fair-minded business men; our counsel advise us that there is no doubt as to the ultimate successful termination of our case; and we confidently believe that we will market these cars as heretofore and that our agents and dealers will not suffer on account of their loyalty to us or from this unlooked for interruption.

MITCHELL REQUIRES NO DEPOSITS

Racine, Wis., Jan. 10—The Mitchell Motor Car Co. has decided not to accept deposits for future deliveries from its agents. "If the Mitchell company were to accept these deposits with its output of something more than 6,000 cars," says Sales Manager Gilson, "it might have the use of more than $300,000, on the basis of $50 a car, for the greater part of the year. The Mitchell company does not wish the deposits, which generally are taken by motor car manufacturers at the time the orders are given. It wants the agents to take the cars and only as many as they can absorb. In formulating the policy not to contine to accept deposits from agents last year it was agreed to return them all by September 1, but our company cleaned up its books before June. The company is strong enough financially to forego this practice of accepting deposits. Under the practice as it is now observed the sight draft is drawn upon the shipment when it is made."

Quakers Dine Many Celebrities

PHILADELPHIA, PA., Jan. 10—Good roads, with special emphasis on the Philadelphia-Pittsburg highway, was the keynote of the second annual banquet of the Quaker City Motor Club at the Hotel Walton last Thursday night. One hundred and seventy-five members and guests—numerous state and city officials and high lights of the local motoring clubs among the latter discussed the menu.

Congressman J. Hampton Moore introduced the various speakers, among whom were United States Senator Boies Penrose, Mayor Reyburn, State Senators Grim and Sproul, Mayor Story, of Atlantic City; Director of Public Health Joseph S. Neff, M. D.; John P. Elkin, judge of the supreme court of Pennsylvania; President Berger, of the Q. C. M. C., and Sporting Editor George Graham, of the North American of this city.

Congressman Moore drew a parallel between good roads and inland waterways, in the latter of which he is greatly interested, being president of the inland waterways commission, and when he inadvertently admitted that he was not a motor car owner, claimed that he noticed several of the tradesmen present making a note of the fact.

In introducing the senior United States senator of Pennsylvania, Boies Penrose, Toastmaster Moore delivered an elaborate defense of that much-maligned individual. Prefacing a strong appeal for the early inauguration of work on the cross-state highway with an incident of his early life when it took him 9½ hours to go from his home to Indiana, the county seat, whereas last summer he had traveled the same route in a motor car in considerably under an hour, John P. Elkin, judge of the supreme court of Pennsylvania, urged his hearers to agitate for the wiping out of the constitutional provision which stands in the way of the bonding of the state for $50,000,000 to build good roads. He recalled the hope he had one time entertained of being governor and said that he had planned, if elected, to stake the reputation of his administration on good roads.

Webster Grim, the representative of "Old Bucks" in the state senate, and the author of the Grim bill, urged uniform motor regulations, at least between Pennsylvania and adjacent states, and said that there was no valid reason why a Pennsylvania license should not be as good in New York or in New Jersey as in this state, and predicted the gradual spread of interstate exchange of courtesies along this line—unless, indeed, a federal law could be passed—which would enable a tourist to travel across the country from ocean to ocean without having a lawyer in the tonneau.

Among others who responded to toasts were President L. D. Berger, who gave a resume of the club's activities during the past year, and George M. Graham, sporting editor of the North American, who made a sly dig at some race promoters and officials not a thousand miles from the Quaker City who seemed to think that all knowledge along the lines of race promotion and management was confined to their own brainpans, and concluded by reading a lecture to certain gentlemen on the board of Fairmount park commissioners who not only did not contribute to the fund, but who came near spoiling the race by demanding huge blocks of free seats and parking spaces for their own use.

In conclusion Common Councilman Frank Hardart introduced the following resolutions, which were unanimously adopted:

Whereas, the Fairmount Park races, as conducted by the Quaker City Motor Club, have been instrumental in giving a day of healthy recreation and pleasure to a larger number of citizens than any similar event promoted in Philadelphia or any other city;

And whereas, these races have created more favorable criticism and publicity than could be obtained from any other source;

And whereas, besides the enjoyment, pleasure and publicity derived from these races, material assistance has also resulted for some of our most worthy charitable institutions; therefore,

Be it resolved, that for the purpose of continuing and promoting these races we recommend that an effort be made to obtain the assistance of the legislative and executive branches of our city government;

And be it further resolved, that his honor the mayor be requested to lend his aid by recommending to councils an appropriation of not less than $5,000, said amount to be added to cash prizes donated by the Quaker City Motor Club, and to be distributed by said club as it sees fit to the winner or winners of the races.

RECEIVER FOR HOLSMAN

Chicago, Jan. 8—Much to the surprise of the motor trade the Holsman Automobile Co. today went into the hands of a receiver, the American Trust and Savings bank being named and A. C. Bremer being placed in charge of the plant. While no official statement has been made yet, it is understood that the liabilities amount to $120,000. Receiver Bremer, while not in a position to make an official statement in the matter, believes the assets will total about $75,000. The Holsman company is the pioneer in motor buggy manufacturing and it has been supposed that it was in a flourishing condition. The receiver, however, claims that the concern was trying to do business on a too small capital, which forced it into bankruptcy. At the present time there are $19,000 in orders booked and the plant will be continued until those orders are filled, which will be in about three weeks. Receiver Bremer is of the opinion that creditors can secure more by continuing the business than if the plant were put up at forced sale.

ANOTHER RECORD FOR OLDFIELD

Los Angeles, Cal., Jan. 9—Barney Oldfield and his Benz smashed more records today when he beat de Palma's 5-mile mark of 4:26. Oldfield did the distance in 4:25⅕. The Knox won two of the races which were run in addition to the record trial, taking the 10-mile in 9:42⅘ and the 5-mile handicap. In the latter the Knox only beat the Cadillac by 10 feet.

TREND IN DESIGN AS SEEN IN THE GARDEN

(Continued from page 11.)

entire dead weight independently of the driving mechanism, is to be seen in the rear axle of the Alco. Apart from such scattering instances as these there is not a great deal to be noted. Fashions in rear axle drives, if such they may be termed, have become pretty stable. The same designers who have always shown their preference for a spur differential still adhere to it and the same thing is true of those who have hitherto employed a bevel type.

Doubtless the greatest amount of difference is to be found in the essential attachments of this part of the drive, such as the presence or absence of a torque rod and the form the latter takes where used, instead of in the rear axle itself. From the Franklin, in which an entire absence of either radius rods or torque rod is to be noted, the entire drive being taken through the big elliptic springs, up to such instances as the Locomobile shaft-driven car, on which there is both a tubular torsion rod surrounding the driving shaft and liberal radius rods in addition, there is quite considerable difference in detail to be noted. Doubtless the most numerous class are those using a tubular torsion rod of triangular form in a vertical plane, the apex of the triangle being spring-supported on a transverse member at the head of the propellershaft, and the base swivels at a point parallel with the end of the propellershaft on the rear axle, the Pierce-Arrow being one of the most striking illustrations of this type. A modification of this takes the form of a piece of pressed steel, the triangle naturally not being as large, and a further reduction brings this member down to a single piece of tube, sometimes supplemented by radius rods to take the strain of driving, but more often not. In one or two instances a novel modification that has hitherto only appeared on light cars has made its appearance on more powerful machines. This is the employment of a torsion member taking the form of a large isosceles triangle, having practically the entire length of the rear axle as its base, and the forward end of the propeller shaft is the apex. The triangle lies in a horizontal plane and has two light tubes as its side members. This makes a rigid construction with very light parts, the arrangement having been well worked out on the Matheson shaft-driven model. In some instances, on the other hand, the absence of a torsion rod is to be noted, its function being taken by radius rods, as in the case of the White.

A feature of the rear axle design that is noticeable to the observant eye but that will probably escape the casual seeker for features, owing to its very prevalence, is the general retention of the trussed form of reinforcement used on rear axles. Where special types of reinforced housings are employed, as in the Packard, Stearns, American Locomotive and some others, this is noticeable by its absence, but the employment of the truss is so widespread that the exceptions are few and far between. It only goes to verify the impression that there has been little departure from the practice that has become established during the past several years as the result of experience.

MODERN LUBRICATION

(Continued from page 31.)

the crankcase. There is the usual number of copper leads passing by way of sight feeds on the dash and thence to the motor parts. On the Stevens-Duryea cars the lubricator is placed on the right side at the front end of the motor. On the Studebaker-Garford it is located on a bracket above the flywheel, and on the majority of other cars in this classification its location is conventional.

On the Corbin car an eccentric oil pump is located directly below and driven by the vertical distributorshaft. The pump receives its supply from an oil tank holding 2 gallons, mounted on top of the bracket which surrounds the upper circumference of the flywheel. This location brings the tank directly below the floor boards and is filled through the hood with the aid of a spout extending forward on the right-hand side of the motor. One pipe lead extends from the pump to the sight feed on the dash. This sight feed has three drops, one leading to the rear half of the crankcase by passing through the main bearing; another leading to the front half and also going through a main bearing; and the third leading to a manifold which supplies all four pistons half way up with the aid of an oil groove in the piston at this point. The crankshaft is hollow and the oil is carried by centrifugal force from the main bearings down through the crankshaft to the four throws. This whole oiling device is a combination splash and centrifugal force one.

ROADS NEEDED FOR R. F. D.

The inauguration of the rural free delivery mail service by motor cars in Virginia has given rise to much speculation along this line on the part of those who are interested in good roads and the fast transportation of country mail where the roads will enable mail contractors to use the motor car. Such service, where it has been attempted, has proved of such great value that it has given rise to a new feeling toward good roads among the farming element. Not only is this so but it is likely to mean an immense increase in orders for cars as soon as the state has finished its road projects. The highway commission has been instructed to prepare and furnish the legislative finance committee with a list of the various kinds of roads and the cost of construction. Last year it was shown there have been completed 200 miles of new roads, mostly of the macadam type. Convict labor furnished most of the manual part of the work. The cost of convicts is very low and in fact the project already has increased in favor to such an extent that it is very probable that the next legislature will create a new office, that of superintendent of roads, which will rank equal or subservient to the position of superintendent of the state penitentiary.

Of the many arguments advanced for the construction of good roads, one that is little heard but which is of much importance is this same free delivery service of mail. The advancement of this idea in Virginia has just cropped out and has been a powerful factor for the use of good road advocates. It is even proposed and likely will be the case, that a tax be imposed by the coming legislature on all motor cars according to horsepower and on all vehicles according to the number of horses required to pull them. This money, it is proposed, shall be devoted entirely to the building of roads in the state.

From figures for the last quarter of the past fiscal year given out this week by Cashier Marriott, of the Richmond postoffice, it is shown that the state of Virginia spends less money on rural free delivery than either the states of Georgia, North Carolina or Tennesee, only South Carolina, of the neighboring states, being below Virginia in this respect. The figures are as follows: Georgia, $336,953.07; North Carolina, $265,578.22; Tennessee, $340,-962.87; South Carolina, $157,953.67; Kentucky, $152,433.27; Virginia, $203,023.93.

Virginia shows the largest postoffice receipts of any of the states named, and the reason that its rural free delivery is so bad in comparison is that the condition of its roads precludes the possibility of the establishment of as many routes as the government would otherwise wish. The government will not establish rural routes except where conditions allow for such. The most important condition is that the roads are sufficiently good.

It is conceded that in 10 years the use of the motor car in the state will be practically the only medium for the conveyance of rural mail deliveries. For this reason motorists are taking a keen interest in the matter of better roads and the argument meets with not only the approval but the most zealous support of the farmer. Where by the horse method from one to six weekly deliveries is possible, the motor car way would, on good roads, enable the mail to be delivered for any reasonable distance as often as the mail is now delivered in the average small city. Such a prospect is looked on with delight by the letter carriers.

FINANCIAL CONDITIONS OF INDUSTRY ABROAD

BUFFALO, N. Y., Jan. 10—From the Financial Times, of London, interesting facts are gleaned as to the financial situation in motor manufacturing circles and the Pierce-Arrow Motor Car Co. has compiled statististics from the reports on seven of the big foreign concerns. The report is comprehensive in that the companies included in it manufacture motor vehicles of many kinds and do not confine their efforts to the so-called pleasure cars alone.

The Financial Times reports show that in the amount of net profits the seven companies showed a loss of $291,000 for the season of 1908-9 over the season of 1907-8. In the amount carried forward the season of 1907-8 shows an excess over 1908-9 of $67,415. The story of the dividends is also an interesting one and should tend to show that the stories of vast profits in the motor car industry are not very well founded. In 1907-8 the seven companies paid an average of 7.5 per cent to the stockholders, but that overproduction served as even a greater blight than money stringency the dividends for 1908-9, when these same companies paid an average of only 4.28 per cent, show in a conclusive manner. The fact that some companies have been able to conduct their business with a profit is commented on by the Financial Times as follows:

"As usual the experiences of the different companies have been varied, for in the motor trade so much depends upon the temporary popularity of one particular type of car, that even in the worst seasons a concern which happens to produce something which hits the public fancy may be able to give a good account of itself." Explaining the situation in another line, the Financial Times says: "Another factor, and one which has to be taken into account in estimating the future possibilities of the trade, is the slackening off in the demand for public utility and trade vehicles, such as motor buses, motor cars and motor wagons and lorries. Although the horse is steadily being superseded by the motor, the pace at which the alteration is being carried out is not quite so fast now as it was, and after the first demands were satisfied there came the inevitable reduction in the number of fresh orders, while profits had been reduced owing to the greatly increased competition. It is not surprising, therefore, that the majority of the companies with which we are able to deal today exhibit declines in their net earnings even against the poor figures of 1907-8 and perhaps the most surprising thing is that three of the seven have managed to improve their condition."

RUSSIAN MOTOR CONDITIONS

Washington, D. C., Jan. 10—In reply to an inquiry, Consul General John H. Snodgrass, of Moscow, furnishes the following information concerning motor vehicles in Russia:

There have been no motor car manufactories, in the American meaning of the word, in Russia. A number of bicycle and carriage manufacturers have, for some time, been importing parts of motor cars, such as engines, tires, and the finer construction, while the body and rougher parts have been made in Russia. There are no available figures as to the number of machines that are put together in this way, but the business has not been particularly thriving, as the Russians demand the best the markets afford, and the majority refuse to purchase anything of the cheap or shoddy grades.

The demand for motor cars and commercial vehicles is constantly growing, as the following figures taken from the customs returns show: In 1906 only 245 machines were imported; this had risen to 555 in 1907 and to 866 in 1908. For the first 7 months of 1909, 628 passed through the custom-house, and agents are anticipating better results for 1910. The larger machines are in demand and sell better than those with less than four seats. There is also a growing trade in motor freight cars and trucks for use by the municipalities and the contracting companies. The following statement shows the growth of the trade in Russia—imports—and the classes of machines in use:

	1907		1908	
	Number	Value	Number	Value
Four and more seats	319	$719,500	572	$1,364,000
Fewer than four seats	89	97,000	124	165,000
Freight and truck motors	147	140,500	170	146,000
Total	555	$957,000	866	$1,675,000

For the first 7 months of 1909, the machines of four or more seats imported numbered 461, valued at $934,500, those with fewer than four seats numbered seventy, worth $71,500, and motor freight cars and trucks numbered ninety-seven, valued at $74,000, a total of 628 cars valued at $1,080,000. The requirements in Russia are steadily increasing, but American manufacturers should carefully study local conditions and build their cars for export to this country accordingly. The streets in Moscow, for example, are paved with cobblestones which try the strongest machines, and the country roads in Russia are usually in as bad condition as the average highway in the United States. The higher grade cars are most popular, as the Russians always require the best, and are willing to pay for a prime article, although cheap machines are to be found. All the principal companies of France, Germany, Italy, and England are represented, while only one American firm is making any effort for an extension of trade. Russia presents the most lucrative territory in the world for the introduction of motor cars that are strongly built and that have modern improvements. The Russians are taking to motoring and many of the wealthiest families have discarded their horses, which is saying much for the motor car. There is a vast amount of wealth in this empire among the upper stratum of society, which is readily spent in any form of pleasure. The Russians part with their money more readily even than the Americans, especially when there is any form of sport in sight, so that it will not be a difficult problem to interest those with means when a suitable car is presented. At the present time the French and Italian cars are the favorites, though Germans have been successful in getting a large part of the trade.

If American concerns will make arrangement with houses in Russia, or send a personal representative from home, they will do better than to trade through middlemen in Hamburg and London, who must have a handsome commission for introducing the goods. Thus by the time the car reaches the purchaser, the price is much greater than the European car of like value. The duty on motor cars, four and more seats, is $113.30; on machines of fewer than four seats, $72.10; on motor trucks and chassis, $36.05.

TABLE SHOWING FINANCIAL REPORTS OF FOREIGN CONCERNS

	Net profit		Ord. Div.		Carried forward	
	1908-9	1907-8	1908-9	1907-8	1908-9	1907-8
Belsize	$ 64,505	$ 2,910 *a*	6	nil	$ 35,890	$ 22,310
Charron	31,040 *h*	355,505	nil	9 *c*	100,880	210,005
Daimler	113,490	239,105 *d*	nil	nil	91,665	.....
Darracq	491,790	801,705	7½	20	120,765	171,690
DeDion-Bouton	40,255	108,640 *f*	4	7	11,640	21,340
Delahaye & Co.	89,725 *g*	104,760 *h*	6½	6½	12,125	17,945
Rossleigh	14,065	7,275	6	10	26,190	23,280
	$844,870	$1,135,870 *i*	Av. 4.28%	Av. 7.5 %	$399,155	$466,570

a loss on 18 months' business. *b* before deducting depreciation. *c* on Preferred Ordinary. *d* loss. *e* $35,450 withdrawn from General Reserve account to cover debit balance. *f* for 18 months. *g* to December 31, 1908. *h* to December 31, 1907. *i* total after deducting loss of $242,015 by two companies.

PLANNING PARKWAY SYSTEM

The board of supervisors of Milwaukee county, Wisconsin, has taken the first definite step toward the construction of the proposed country boulevard or parkway system by voting to extend Grand avenuefi Milwaukee city's principal thoroughfare, from the western end of the new $1,500,000 viaduct to the western county limits. The boulevard will have a 30-foot parkway. The metropolitan park commission, an advisory board of prominent Milwaukee men, first suggested that this road be constructed.

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

HAS IGNITION TROUBLE

BATTLE CREEK, MICH.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly tell me if my ignition apparatus is properly connected? On a four-cylinder engine I have a Splitdorf magneto, with single non-vibrating coil on dash, and with dry cells connected for starting. The life of the dry cells is very unsatisfactory and nothing like what my experience has been with unit coils and vibrators for each cylinder. With such coils and on both motor car and marine engines I have gotten months of service from dry cells when they were used continuously for firing without a magneto. On the car I am now using I will put in dry cells which test up to 18 or 20 amperes, use them only a few times a day when starting the engine, switch over at once onto the magneto, and in 1 or 2 weeks the cells will not stir the needle on the ammeter, and I will have hard work starting. I have put a special wooden lining in my steel battery box and insulated the cells very carefully from the machine. The wires are in a heavy conduit and I cannot discover any ground. I find by taking out a plug and laying it on the engine that it sparks once for every two complete revolutions of the crankshaft. Is this right? It seems to me that with a four-cylinder engine the plug should spark only once every four revolutions. Is the distribution right, and if not can this account for the short life of the batteries?—T. J. Henderson.

In the ignition system of which you speak both poles of the battery should be connected to two terminals on the coil. With the switch on the battery is short-circuited and will drain out. You must be careful not to leave the switch on while the car is standing still. Your motor being a four-cycle takes four strokes of the piston or two revolutions of the flywheel to perform its cycle, so that one spark to every two revolutions in each cylinder is correct.

FINDING MISSING CYLINDER

Geneseo, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age explain how two sets of batteries should be connected through a single unit-vibrating Heinze coil? How can one find a missing cylinder through a non-vibrating coil? How many disks and about what diameter does the Winton six have in its transmission?—W. J. P.

In placing two sets of batteries in a car the two negatives should be wired to ground, that is any metal part of the motor, and both positive poles should be connected to the switch thence to the coil so that by manipulating the switch either set of batteries can be used. You can locate the missing cylinder either by opening the petcocks while the motor is running and observing what comes out or by grounding the secondary current at the spark plugs with a piece of heavily insulated wire or metal. The Winton clutch consists of sixty-seven disks, the larger ones being about 8 inches in diameter.

GASOLINE ECONOMY

Paris, Ky.—Editor Motor Age—In order to settle a much mooted question, will Motor Age through the Readers' Clearing House inform me which requires the more gasoline, a car running 20 miles in 1 hour or the same car running the same distance in twice the time? The road to be level and all other conditions the same.—Reader.

It would depend altogether on the power and weight of the car in question. With the throttle as nearly closed as possible and the spark as early as possible, which is the most economical way to run a motor, about 20 miles should be a much more economical speed than 10 miles an hour.

MIXTURE IS TO BLAME

Bourbonnais, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age help me to locate the trouble I am having with my model S Ford roadster? This machine is equipped with an old style Kingston carbureter. When I open the throttle, even if but one notch more, it will miss in one cylinder for 6 or 8 rods, then run all right until I have to slow down again, when the performance is repeated unless I close and open the throttle again immediately, when on the second or third opening it will respond at once. It does not do this when the clutch is out. The missing is accompanied by a spitting sound as though it lacked compression, but the compression is good when cranked by hand. The carbureter is in good shape aside from a noticeable wear on the air valve pin. I also have had considerable trouble with the motor knocking under heavy load, and especially in climbing hills, but have overcome this to some extent by using a richer mixture.—M. L. S.

All your trouble as indicated is in the quality of the mixture. The old style Kingston carbureter depends on the taper at the point of the adjusting needle to get the correct mixture at different motor speeds. The easiest way to remedy this would be to get a new carbureter or at least a new adjusting needle and try different tapers on the point.

RACES PROBABLY CONFUSED

Cambridge, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me a little information in regard to the following: In Motor Age, issue October 28, 1909, appeared an advertisement of the Pope Mfg. Co. stating that the Pope-Hartford won the Long Island Derby held September 29, 1909, for racing cars of highest horsepower. What was the time, distance, and what cars competed? Does it effect gasoline in any way to pump it long distances through small piping? I have been advised that under such conditions that it lost all semblances to gasoline and if thrown on a fire would put it out. Is this true?—F. Harding Hand.

The Long Island Derby was run at Riverhead, L. I., September 29, but the Pope-Hartford was not a contestant in any one of the five classes. Doubtless there was a mistake made somewhere and instead of the Long Island Derby the advertisement should have read the Portola carnival, which was run at San Francisco October 23, and where the Pope-Hartford, driven by Jack Fleming, won two of the three classes, averaging 63.72 miles per hour in the 254-mile race and 65.7 miles per hour in the 148-mile event. In these races the Pope-Hartford defeated such well known makes as the Apperson and Lozier. As stated in the Readers' Clearing House last week, when a similar question relative to gasoline was propounded, Motor Age knows of no reason why pumping the fluid a long distance should cause it to change in character or to render it inflammable.

UTILITY OF ELECTRICITY

Francesville, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly state the relative utility of electric and gas lights for motor cars? Which supplies the stronger light and how many hours will a 6-volt, 60-ampere storage battery supply the two main lights with current? What is the best anti-freezing solution to use in a gas generator?—T. W. Kelsey.

Electric headlights are now made that are satisfactory as long as the lamp is in good condition. The lamps must not be used too long or the light will deteriorate. A 6-volt 60-ampere battery would light two headlights about 60 hours. Alcohol, about one part to three of water, is the best anti-freezing solution for a generator.

AIR PUMP IS BETTER

Rogers, O.—Editor Motor Age—Will Motor Age tell me if I could get pressure from the chamber of a Ford model T engine so as to give me 100 pounds pressure say on a 2-gallon tank. If so, what size pipe would I need? Would it interfere

with the working of the engine in any way after this pressure reached the minimum?—P. M. Crawford.

It would not be feasible to tap a cylinder to take pressure from it as your letter suggests. It will interfere with the smooth running of the motor and the pressure of the burnt gas stored in a pressure tank when cold would only be equal to the compression of the cylinder. A better plan would be to have an air pump to such a purpose.

FILTERING LUBRICATING OIL

Danville, Ill—Editor Motor Age—Will Motor Age tell me if there is a satisfactory method of filtering lubricating oil? One frequently has an accident, or removes the oil from the crankcase comparatively clean. It seems by some process the oil might be rendered fit for use and save the cost of new oil.—A. Merrill Miller.

Without a very expensive filtering plant it would not be feasible to render the refuse oil suitable for motor use and even then there would be danger of grease and foreign substances being in it. It's better economy to use good, clean oil at all times in your motor.

AFTER DIFFERENTIAL FACTS

Detroit, Mich.—Edith Motor Age—To settle a dispute will Motor Age please answer the following questions: 1—Is it possible to build a car without a differential gear where a single motor or shaft is used? 2—How many cars are successfully built that have no differential gear? 3—Does the Christie car possess a differential gear?—Karl A. Kendrick.

Other devices have been used to substitute for the differential gear. Motor Age has no data on hand from which to form an opinion as to how many cars have been built without a differential. The Christie car has a differential spur gear driven from the transmission shaft.

SAYS OIL IS WASTED

Franklin, Pa.—Editor Motor Age—In connection with the oil tests on the other side of the Atlantic and Motor Age's own suggestion when speaking of the car of the future "and in which the lubricating means for the motor are adequate for 200 miles, in some cases 500," I thought I would furnish a line or two on the subject of lubrication of the modern motor car. The fact that several small cars were able to make a showing of over 40 miles to the pint of lubricating oil is commented on as being remarkable, but why it should be I cannot understand. There are trunk line railroads in this country making upwards of 30 miles on a pint of all kinds of oil, which includes grease and the oiling of the tender wheels. It is not necessary for steam roads to carry different kinds of oil for different classes of locomotives. Big and little, all use the same kind and with the best results. That steam locomotives differ more than engines of gasoline cars goes without argument. Then why is it necessary to advertise that this or that company will send you the proper kind of oil for your machine if you will send the name of the car and horsepower? I claim that any oil that will run one kind of explosive engine satisfactorily, and by that I mean a fast-running engine, will run successfully any fast-running explosive engine. Now, as to the amount of oil necesasry to run a motor car. There is entirely too much oil wasted, not used, by motor car owners. I have used as much as 1 gallon of lubricating oil for a run of 100 miles in my 50-horsepower car, and that was not an unusual amount. The result was always too much smoke and a very dirty engine, the oil seeping through the valve seats and fouling my spark plugs. This year I thought I would make an attempt to keep a clean engine at least and try to stop that everlasting smoke. It was not with the intention of economizing in the use of oil, but simply to get rid of the accumulating dirt. My first long run was from Franklin, Pa., to Burlington, Vt., a distance of 617 miles, which I made in 3½ days, the half-day run being made in the mud from Utica, N. Y., to Saratoga Springs, 107 miles, from 1 o'clock in the afternoon to 7 the same night through the mud. The last day's run was absolutely the worst bit of road I ever saw. I usually make 11 miles to the gallon of gasoline, but this last day I used 17 gallons in making 70 miles of the 142. In that run from Franklin I used just 5 pints of lubricating oil. This does not include the grease in my grease cups or the oil in my transmission case. My whole run through the White mountains and Berkshire hills and back home was made on the same average consumption of lubricating oil. The last 4 days run was from Atlantic City, N. J., to my home, by way of Albany and Buffalo, a distance of 817 miles. We left Atlantic City at 4 o'clock Sunday morning and were at Franklin at half past 4 Wednesday afternoon. Our run was some 35 miles longer than usual on account of two bridges being in course of construction west of Auburn, N. Y. This week I had my car taken down for the regular winter overhauling and was surprised to find it in such good condition. The faint lines in the cylinders which are to be seen on all new cylinders after grinding were not even worn off and the marks left by the smoothing knife on the main bearings were still there. There were no signs of carbon on any of the pistons and the valves and tops of the pistons were brown. There was a show of carbon on one of the valves of the front cylinder. The car on which this was done is an Apperson six-cylinder, having cylinders 4½ by 5 and rated at 50 horsepower. To be sure one must have the very best oil to start with, as I would not think of using anything but what I considered the best to be had for the money. Another thing which I desire to speak of is the kind of stuff to use in the transmission cases. Oil is better than grease in any place that it can be used. It will save wear of parts and it is not necessary to get up an artificial heat to melt it so it will properly perform its office. This last statement will not be agreed to by those who are new in the lubricating business, but it goes without argument with those who have been using lubricants for years and who should be in a position to know. —John A. Wilson.

WATER FOR GENERATOR

Mullinville, Kan.—Editor Motor Age—Through the Readers' Clearing House will Motor Age advise me if there is anything I can use in the place of water in my generator that will be successful for making acetylene gas during this freezing weather? —W. A. Cope.

Denatured alcohol up to as high as 25 per cent may be used without affecting the lights. Calcium chloride also can be used successfully if care is taken to obtain the pure article. The proper proportion to withstand a zero temperature is 3 pounds of pure calcium chloride for each gallon of water. A convenient way to prepare the solution is to first make a saturated solution of the calcium chloride and water, that is, to mix with a quantity of water warmed to 60 degrees Fahrenheit all the calcium chloride the water will dissolve, and use equal parts of this saturated solution and pure water, regular drinking water, in the generator. It is thought this will produce results.

FRAYER-MILLER IN VANDERBILT

Hibbing, Minn.—Editor Motor Age—Will Motor Age inform me what the Frayer-Miller car did in the 1907 Vanderbilt cup race? The company had two cars entered in that event, did it not?—Fred M. Smith.

The Frayer-Miller qualified as one of the American team in the 1906 cup race and was one of the eighteen cars to start. It was driven by Lawwell and retired at the end of the fifth lap because of a broken fan. The course was 29.7 miles to the lap and the Frayer-Miller's fastest lap was 33.34. There was no Vanderbilt cup race in 1907.

HAS NORTHERN PARTS

Detroit, Mich.—Editor Motor Age—We notice in the Readers' Clearing House that one of Motor Age readers, F. Young, of Rochester, Minn., inquires where he might purchase Northern repair parts. Motor Age informed him that they might be purchased through the E-M-F company, which has absorbed the Northern company. The Autoparts Mfg. Co. recently purchased all the patterns, jigs and tools for the Northern, Wayne, Queen and Blomstrom cars and is in position to supply any of the repair parts. We also are doing special work in this line and are putting out new axles, steering gears, etc. — Autoparts Mfg. Co.

Electric Protective Checking System

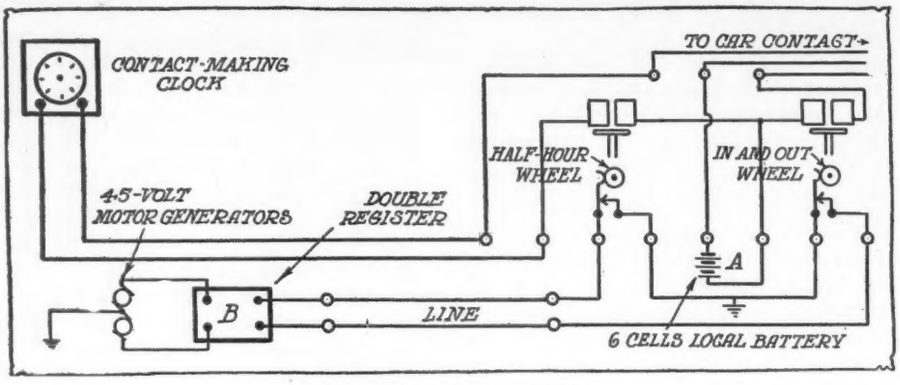


FIG. 2—DIAGRAM OF SCHEME

By Joseph B. Baker

WITH the growth of motoring, the illicit use of cars, known as joy-riding, has increased to a widespread evil. What was at first looked upon as an occasional frolic by a chauffeur and his companions without the car-owner's permission, now has become identified as reckless night-driving at high speed, not infrequently resulting in loss of life and property. The evil has seemed at times to be getting out of all restraint. It recently has been brought into especial prominence by several criminal convictions, following fatal accidents, and public attention, thus aroused, has resulted in the more rigid enforcement of existing ordinances against law-breaking with vehicles and the enaction of new ordinances.

The danger from joy-riding is what might be expected when a powerful car is driven about the streets at night by an irresponsible man. Yet the criminally careless driver, although the immediate delinquent, is to be judged rather as a creature of loose conditions than as a singularly wicked person of his own bad initiative.

Prevents Joy-Riding

Believing that the logical way to put a stop to joy-riding is to put the responsibility of the use of every motor car squarely up to its owner, the National District Telegraph Co., of New York, which operates electric alarm systems for the protection of bank vaults, stores, etc., against burglars, has recently developed an ingenious motor car protective system which gives a definite and exact report of the presence of the car in the garage or its absence therefrom through the 24 hours of each day. The system operates by means of electric signals to the central office, without possibility of collusion between the chauffeur and the garage man. Its operation is simple, the chauffeur being required to insert a brass plug attached to a flexible electric cable in the garage, into a socket mounted on his car when he brings the car into the garage, and to remove the same when he takes the car out. This plug contains car-contacts, the making and breaking of which cause signals to be received at the central office of the company.

For convenience in explanation, the system may be considered as three elements: the signaling devices at the garage the patrons of which—car owners—are subscribers to the system; a line running to the central office, and recording devices at the central office.

Apparatus and Connections

The apparatus and its connections—Figs. 1 and 2—first will be described, and then the operation of the sytem.

At the garage, for each car, there is an apparatus consisting of: A contact device for the car at its stand, a pair of telegraph relays actuating contact-wheels, a contact-making clock.

The car-contact device, as the element that is handled by the chauffeur, must of course be thoroughly tamper-proof. This is attained by making the car itself the means of operating the contact, by a high-grade lock and key of the Yale type. Securely riveted to the frame of the car —Fig. 3—is a brass socket with the key inside, fastened to the bottom of the socket. The lock is contained in the end of a removable brass plug, constituting the terminal of the line from the individual car stand to the central office and fitting into the socket with a tongue-and-groove engagement which insures the proper entering of the key. Inserting the plug in the socket—and it will go in its own proper socket only, of course—and giving it a partial turn, causes the key to lock to and shortcircuit three wires terminating in the plug. Vice versa, the unlocking of the socket opens the short circuit, leaving the three wires dead-ended. Since the contact is thus operable only by an individual key, and since that key is inaccessible for use except in the manner described, the only way in which the contact can be operated is by the actual presence of the car at its stand.

The wiring in the garage, terminating in the plug, is by a heavy three-conductor flexible cable having enough slack to permit convenient attachment of the plug to the car when the latter is run into its stand. Any attempt to tamper with the wiring, by cutting into the cable, for example, is barred by a tell-tale circuit embedded in the outside insulation surrounding the three service wires and connected to an entirely separate alarm in the garage.

Operation of Relays

The two relays are connected to a local battery, and they operate to release two separate clockwork-driven contact-wheels, which send signals, in telegraph dots and dashes, over the line to the central office. The relay actuating one of these contact-wheels, which is called the half-hour wheel, is included in the circuit of the contact-making clock. The clock has a set of contact segments, one for every car to be protected; a separate circuit being run in the garage from each segment to each car stand. These segments are arranged in a circle, or dial, and the clock mechanism causes a copper-leaf wiper, mounted on an arbor at the center of the dial, to make a complete revolution of the dial once every 30 minutes. Thus, at a given instant in every 30 minutes of elapsed time, the clock closes for a few seconds the circuit to each plug in the garage.

When the car is in—plug in its socket—therefore, the energizing of the relay once every 30 minutes, followed in a few seconds by its de-energizing, permits this

FIG. 1—THE CLOCK APPARATUS

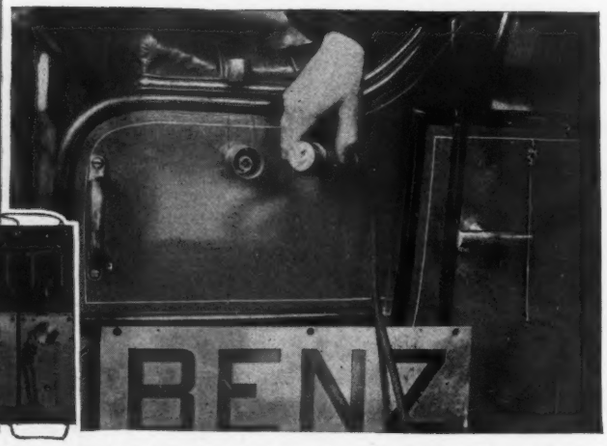


FIG. 3—CAR-CONTACTING DEVICE FASTENED TO CAR

# of Designed For Use on Motor Cars

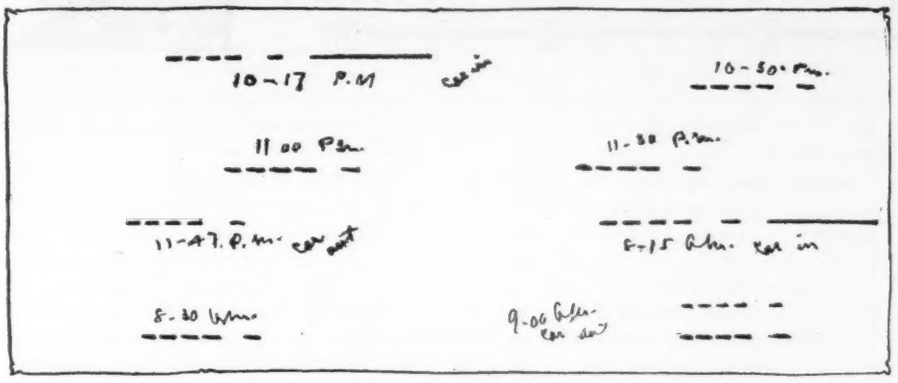


FIG. 5—SPECIMEN RECORD TAPE FOR CAR 41

wheel to make one revolution, causing it to send in the car signal on one side of the line. The relay actuating the other contact-wheel, called the in-and-out wheel, remains energized as long as the car is in. The removal of the car, necessitating the removal of the plug from the socket, de-energizes the relay and allows the wheel to make a partial revolution, sending in the car signal on the second side of the line; and replacing the plug again, upon the return of the car, re-energizes the relay and allows the wheel to complete its revolution, again sending in the car signal on the second side of the line, but with a long dash added.

Like a Messenger Call

The line to the central office consists of two wires—a metallic circuit—for each car to be protected, taken through underground cables. The apparatus at the central office, Fig. 4, consists simply of a telegraph register, like the ones used in district messenger offices, printing the incoming Morse signals on a paper tape, Fig. 5. The register is a double one, however, printing on one side of its tape the signals sent in by the half-hour wheel and on the other side of the tape the signals sent in by the in-and-out wheel. The time of receipt of every signal is noted on the tabe by an attendant called a signal checker, who always is on duty at the central office.

The operation of the system is as follows: The two contact-wheels, controlled by their separate relays, operate to send in a car-signal individual to the car to which they are connected to protect. As long as the car is in the garage, the half-hour wheel is released for one revolution once every 30 minutes by the contact-making clock, so that its signal—for instance, 41, four dots, a space and a dot, thus: - - - - -, comes in regularly, showing not only that the car is in the garage but also that the system as a whole is in continuous operative condition. The time of receipt is, of course, noted opposite each signal on the tape; but the record is one of central office supervision and does not go to the subscriber.

Taking the car out of the garage, and also putting it back after it has been out, brings the in-and-out signal wheel into action, printing the car signal on the other side of the tape. When the car is taken out, this signal-wheel sends in the individual car signal, - - - - -, and the time of receipt of same is noted by the signal-checker, whose attention is especially called to the arrival of the signal by an auxiliary alarm. As long as the car remains out, no more signals come in. Bringing back the car sends in the car signal modified by the addition of a long dash, which serves to distinguish this signal from the one that had been sent in when the car was taken out.

From the register tape at the central office, daily or weekly reports are made to the car owner, who is thus kept accurately informed of the use that is being made of his car.

The charge made by the company for this service is $100 per annum. The system does not require a separate register for every car. Inasmuch as the car-signals are individual and distinct from one another, a number of cars can be connected on the same register, just as in a distinct messenger office a number of call-boxes are connected to one register. The plan is to connect all the subscribers' cars in a given garage on one register; the separate contacting of the contact-making clock, and the extreme unlikelihood of two cars being unlocked at the same instant, preventing interference of tape signals. Or the same register and clock can take care of a number of garages, each of which has the service on several cars. The effectiveness or the system in discouraging joy-riding resides largely in the moral effect of a central-office protective system known to be independent of local influences.

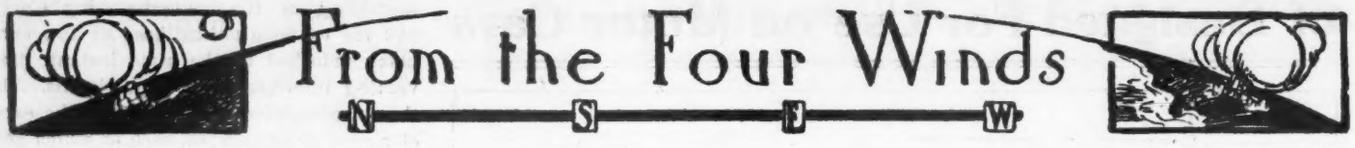
The following is the interpretation of an example tape record for 24 hours, Fig. 5: At 10:17 p. m. on a given date the car, to which is assigned signal 41, is brought into the garage, causing this signal ending in the long dash to be printed on one side of the tape, the upper side, in the illustration. The clock in the garage makes contact on the No. 41 car-stand just on the even hour and ½-hour, and signals come in on the lower side of the tape showing the car present in the garage at 10:30, 11 and 11:30 p. m. Before the expiration of the next ½-hour, however, the car is taken out, as shown by the receipt of a signal from the in-and-out wheel, at 11:47. The next signal is of the return of the car, at 8:15 the following morning. Next come the regular 8:30 a. m. and 9 a. m. signals, showing the car present; but the latter signal is accompanied by one on the upper side of the tape showing the car was taken out immediately afterward.

Different Kinds of Reports

The notification given by the company to the car-owner depends on the special instructions that he gives in connection with his contract. In many instances the company simply makes a daily report. In other cases the owner may be notified by telephone, or by special messenger, immediately upon the receipt of an out signal, and steps taken to trace the car—perhaps through the police department. The regular report to the subscriber is made on a blank form, and the foregoing record would appear in substance as follows:

"Car ———— came in 10:17 p. m., November 13; taken out 11:47 same date; came in 8:15 a. m. November 14; taken out 9 a. m. same date; ————."

FIG. 4—CENTRAL OFFICE, SHOWING TELEGRAPH REGISTERS AND CHECKERS



Vancouver's Good Showing—Vancouver, Wash., has more than fifty blocks improved with hard surface paving and the council has just adopted plans for thirty more to be constructed.

Women Motorists Dine—The handsome clubrooms of the Ladies' Quaker City Motor Club, in the Hotel Majestic, Philadelphia, were filled last Tuesday evening on the occasion of that organization's annual banquet. Gold and white, the club colors, mingled with yellow and blue flowers, emblematic of the city colors, in the scheme of decoration, which combination was also carried out in the handsome menu card. A cable dispatch from the Royal Automobile Club of London, England, was read, electing the Quakeresses to membership in that organization.

Governor Harmon's Views—In the annual message of Governor Judson Harmon, of Ohio, the following recommendation relative to motor law is contained: "Fines alone have proved ineffectual to check the great and growing peril from fast and reckless running of motor cars. There should be greater strictness in the issue of licenses and provision made for promptly revoking them as a further penalty. Such a law is said to work admirably in New Jersey. The present license fees seem too low. I think, too, that fairness requires grading them by capacity or size."

Carriers Interested—The Ohio Rural Mail Carriers' Association has prepared a bill which will be presented to the next session of the general assembly for the maintenance of the roads after they have been built by means of state aid. The carriers have been looking into road-building as it is practiced in various countries and it is found that as high as 75 per cent of the money has gone into the pockets of politicians. The bill they are urging creates the office of county road superintendent, who is to name a deputy for every township and these are to have charge of maintenance.

Missouri's Showing—Missouri has been registering motor cars for 3 years and the total registration for the year 1909 has been found to almost equal that of the other 2 years. Up to date, 7,740 cars have been licensed by the state, of which 3,540 received tags in 1909. The distribution has been largely in the big cities of the state, although country districts show a gain of 50 per cent also. More than 550 cars went to rural parts of the state during the year that has just ended. Two hundred of the makes registered were made in Missouri. Four makes of cars were so popular as to comprise more than one-third of the total number registered. These four with the number licensed through 1909 were as follows: Buick, 414; Ford, 369; Packard, 107, and Chalmers-Detroit, 103.

Omaha Wants Another—The Omaha city council has purchased a fourth car for the municipal garage. Recently the city bought two motor patrol wagons, and last week added to this an emergency police wagon. Now on recommendation of the city engineer a big seven-passenger car will be bought for the use of the city engineer's department and also for the purpose of showing distinguished visitors about the city.

Novel Test Held—An interesting demonstration was made in the Fredrickson Automobile Co.'s showroom in Omaha last week to show how many times a wheel, started by hand, would whirl. A Chalmers-Detroit car was jacked up and the wheel whirled until it reached a maximum velocity and then released. It revolved 411 times and as the circumference of the tire is 110 inches, a point on the tire traveled 3,376 feet or nearly ⅔ mile.

Freight Cars For Makers—The Chicago, Burlington & Quincy railroad has followed the lead of the Milwaukee road in furnishing special freight cars for shipments of motor cars, and it is reported that an order for 500 has been placed with the Burlington's shops for early spring delivery. The West Milwaukee shops of the Milwaukee road are still building these special cars, Wisconsin motor car manufacturers having become partial to them since first being granted their use.

Two Chauffeurs' Clubs Formed—St. Louis now has two chauffeurs' clubs. The Automobile Engineers' Club, which was the first organized and which became temporarily defunct, has been revived and officers have been elected. The by-laws show that it is to be much on the same plan as the St. Louis Automobile Drivers' Club, which was organized several weeks ago. No chauffeur under 21 years of age is admitted to membership. The object of each is to encourage competent driving.

Ohio Ruling—In a recent opinion Attorney General U. G. Denman, of Ohio, delivered a ruling of widespread interest to motorists in this state. He holds that city councils of the various municipalities in Ohio have no authority to pass ordinances regulating the speed of motor cars, but that they must abide by the laws of the state upon that question as enacted by the legislature. The state law provides for a speed of 8 miles per hour in the business section and 15 miles an hour in the outlying parts of cities, and the attorney general holds that all the power a city council has is to establish the 8 and 15-mile zones by city ordinance. This will necessitate the repeal and reënactment of city ordinances in almost every municipality in the state of Ohio.

New York Fees—Secretary of New York State Koenig, at Albany, reports that the fees from motor car owners and chauffeurs in that state during 1909 amounted to more than $82,000, the largest sum ever received by the state from this branch of taxation. He says his statistics show that not the wealthy alone are now buying motor cars, but that the middle classes are purchasing many machines. High-priced cars were not generally bought in 1909, according to Secretary Koenig, the tendency being toward the lower-priced motor cars.

City Making Own Cars—A motor apparatus for fire use will be made in Minneapolis and a workshop for this purpose will be ready March 1. Machines for use by district chiefs will first be erected, the machine now being used by Chief James Canterbury having proved a great success. Construction of self-propelled hose carts will next be started. "I believe that by making our own cars we will save the city thousands of dollars," says the chief. "The onward march of progress makes it impossible to buy motor cars for the department. If I can save the city thousands of dollars by making the machines at home, I believe I should do so."

Alabama Forms Society—At a recent enthusiastic meeting in Montgomery, Ala., attended by half a hundred motorists of several cities of the state, the Alabama Automobile Society was organized to further public interest in motoring and the building of roads on improved lines. Officers chosen to serve the new association for its first year are: Doctor Gaston Greil, of Montgomery, president; J. M. Valentine, of Ozark, and A. G. Ross, of Mobile, vice-presidents; Percy F. Black, of Montgomery, secretary; W. H. McIlroy, of Anniston, treasurer. The first annual meeting for the new association has been called for the first Monday of April, 1910.

An Effective Garage Sign—Tourists are fairly well acquainted with the ordinary signs erected along the highways by garages and clubs, and they are very often surprised at the ineffectiveness of them. In traveling through Canada last fall, the Blue Book car came across three very distinctive signs, erected by Moore's garage, Kingston, Ont. There is no mistaking one of these signs and, especially late in the afternoon or evening, it is a pleasant surprise to have the essential information of the distance to the next town, with a suggestion of the garage brought so graphically to one's attention. On the request of the Blue Book people this photograph

has been taken, and it is suggested that other garages might find a useful suggestion in looking over this.

Franklin County Roads—A statement given out by the county engineer shows that Franklin county, O., now has 850 miles of highways of which 500 miles have been piked after some plan. Of this amount 56 miles have been contracted for during the past year and the contractors are hurrying the work to completion.

State Aid Road Opens—Considerable new and interesting country is being opened up in the state of Washington by state aid road No. 8 in the vicinity of Lyle. The road starts at a point back of Underwood and follows the White Salmon river up through Husum, then up Rattlesnake creek toward Goldendale, White Salmon and Bingen.

Washington Election—The sixth annual meeting of the Automobile Club of Washington was held January 8, when the following officers were elected for the ensuing year: President, J. Chadwick Hunter; vice-president, John K. Heyl; secretary-treasurer, Elliott P. Hough; captain, Joseph H. Falconer; lieutenant, David J. Dunigan; governors, W. S. Duvall, W. D. West, L. A. Dent and W. Hamilton Smith. The annual report of the retiring president, W. D. West, showed that fifty-five new members were admitted during the year. A number of amendments to the by-laws were adopted, chief of which was the consolidation of the office of secretary and treasurer.

St. Louis' Fine Showing—A conservative estimate of the actual motor transactions for the year 1909 in St. Louis puts the figure at $3,500,000. This includes the sales made by local agencies in St. Louis and the territory these agencies supply. Dealers in St. Louis are enthusiastic because of the interest shown within the past few weeks in the development of the industry there. Not an agency is able to supply cars nearly so fast as they are demanded. This is considered remarkable inasmuch as new agencies are entering the field every month. If the business of 1910 does not reach a half million dollars it will apparently be because of some calamity which cannot be foreseen.

Governor Hughes' Views—Governor Hughes, of New York state, had the following to say on the question of motor cars in his recent annual message: "There is obvious necessity for the improvement of the regulation of motor traffic. I believe that a substantial license tax should be imposed for the privilege of operating motor vehicles within the state, the proceeds to be devoted to highway repair. But the matter of first importance for your consideration is the provision of adequate safeguards to protect the lives of our citizens. The operation of motor vehicles should be prohibited, save by those who upon proper examination and after tests especially adapted to their work are found to be duly qualified and are licensed accordingly under proper state authority administering a system of uniform application.

Club at Austin—The Austin Automobile Club, of Austin, Tex., has been organized. A. C. Goeth, was chosen president, Charles E. Anderson vice president and O. H. Millican secretary-treasurer.

New Road Hearing—The Indiana supreme court has granted a new hearing on the cases in which two of the state's road laws were held constitutional. Under these laws improvements aggregating millions of dollars were made, the cost being met by bond issues, which in turn were paid by direct taxation on the property owners in the townships where the roads were built. Judge Jordan insisted a new hearing should be had, but other members of the court dissented from his opinion. It is expected the new hearing will be held within a few weeks.

Minnesota Registrations—Figures just compiled for the state of Minnesota show that there are in use in that state 6,282 cars. It is interesting to note that a very large number of these cars have been purchased by residents of small towns. The compilation shows that in towns of under 1,000 population there are in use 1,169 cars, while in towns between 10,000 and 21,000 population there are only 252 cars. Among the best known cars the Rambler leads all those within $1,000 of its price in towns under 1,000 population, as well as in towns under 3,000 and 5,000 population.

Will Talk Roads—A meeting of the Washington State Good Roads Association will be held in Aberdeen, Wash., January 20 and 21 next. The two main features to be discussed will be the distribution of the state road fund, now amounting to $1,500,000 and the question of granting of franchises for the construction of interurban electric lines on the county roads. L. Frank Brown has proposed that the counties of King, Thurston, Pierce, Mason and Chehalis unite to build a roadway from the sound to the sea, and it is expected this topic will be discussed at some length at the coming meeting. City Engineer R. H. Thompson, of Seattle, will use the stereopticon and show the technical possibilities of the Seattle-to-the-Sea trunk road.

Texans Building a Home—The Texas Motor Club, of Dallas, Tex., has recently closed a deal for a strip of land to be used as its club grounds. The site, which is about 7 miles west of the city, on the Fort Worth pike, is in many respects one of the most desirable locations that could have been secured. It was announced that work on a modern and complete clubhouse in every detail will commence in the near future.

Three Road Bills—Now since the Ohio general assembly has started its 1910 session, there is considerable speculation as to just what highway legislation will be accomplished during the session. There are at least three bills ready for introduction. One is backed by the Ohio Good Roads Federation, another by the state highway department and still a third by the Ohio Rural Mail Carriers' Association. All of the bills are different in important points.

Banquet at Norristown—The annual banquet of the Norristown Automobile Club, of Norristown, Pa., was held Saturday night at the club's cozy home on the Reading pike. Nearly 150 members and guests sat down to a bountifully-spread table, after which toasts were responded to by a number of prominent state and county officials and representatives from the Philadelphia and nearby clubs. State Highway Commissioner Joseph W. Hunter was the guest of honor, and Attorney Theodore L. Bean occupied the toastmaster's chair.

Non-Owners Must Register—Although the average layman has interpreted the license provision of the new Pennsylvania law to mean that only paid chauffeurs would require a license, the legal authorities of the commonwealth have decided that any person operating a machine must carry a license, unless he or she be the owner. Orders have been issued from the highway department to cause the arrest of all non-owners who drive without a license. The Philadelphia clubs are preparing to have the question settled by a test case.

EFFECTIVE GARAGE SIGN DISPLAYED NEAR KINGSTON, ONT.

Among the Makers and Dealers

Has a New Name—The Dennis Friction Clutch Co. is the new title of the Dennis & Vogel Mfg. Co., of Milwaukee, Wis.

Building at Norwalk—At Norwalk, O., the C. F. Jackson Co. has purchased a site opposite the Avalon hotel on which will be erected a two-story fireproof garage, 60 by 80 feet. The structure will be of brick and steel with concrete floors.

Bill & Co. in Frisco—The accessory and motor cycle firm of John T. Bill & Co., one of the best-known houses in southern California, has opened a branch in San Francisco. It is located on Golden Gate avenue, next door to the new establishment of the Excelsior Supply Co., of Chicago.

Minor Wisconsin Events—D. Elmer Roberts, of Racine, Wis., has established a local agency for the Pierce Motor Car Co., of Racine, at Wisconsin and Fifth streets. W. Heck, of Kewaunee, Wis., has been appointed a district agent for the Mitchell in several counties of northeastern Wisconsin. He formerly handled the Glide.

Kansas City Changes—The resignation of J. R. Histed from the Long-Histed Motor Co., of Kansas City, has been tendered. Mr. Histed has started the Ray-Histed Motor Co. that will represent in Kansas City the Overland and Marion, formerly handled by the Long-Histed Motor Co., that still has the American Simplex and the Brush. Both companies will have the same location, 1527 Grand avenue. Mr. Ray is from Kansas City, Kans.

Changes Its Name—Before the completion of the incorporation of the Hughes Motor Car Co., of Minneapolis, a change of name to the Electric Carriage and Battery Co. and an increase of capital from $50,000 to $60,000 were decided on. The following officers were elected: M. L. Hughes, Cleveland, president; Charles Dalley, Cleveland, vice-president; George H. Strickland, secretary; M. A. Trumer, treasurer; R. L. Hunt, Philadelphia, chief engineer; Henry Deutsch, counsel.

May Make Cars—It is now practically certain that the Racine-Sattley Co., of Racine, Wis., vehicle manufacturer, will engage in the manufacture of motor cars. Since the destruction of the Racine Mfg. Co.'s plant, the Sattley works have been called upon to furnish bodies from several large concerns elsewhere. That it was in a position to fill orders immediately has made it appear that the body department has been in existence for some time, or at least since the company engaged a motor car expert from Pontiac, Mich. It is now known that the Holbrook-Armstrong Co., a neighbor of the Sattley concern, is perfecting a gasoline motor for the company's future product. There are two types, a four and a six-cylinder engine. Two hundred are employed in the body department.

Schwartz Joins Metz—W. H. Schwartz has resigned his position as manager of the Boston branch of the Olds-Oakland Motor Co. to become sales manager of the Metz company, of Waltham, Mass.

Big Truck Order—Fulton & Zinke, of Chicago, have contracted for 500 motor trucks with the Weyher Co., of Whitewater, Wis. The order for 500 is to be increased to 1,000 if the Weyher Co. is able to produce them.

White Joins Premier—W. McK. White, who has been associated with the Grand Central palace show, will on February 1 join the forces of the Premier Motor Mfg. Co., of Indianapolis. Mr. White will be associated with President H. O. Smith in the advertising and sales department of the business.

Take On Two Lines—The agency for the Palmer-Singer and the National in Syracuse, N. Y., has been given to Smith & Roehm. King Smith looks after the interests of the Palmer-Singer and Charles Roehm the National. They have temporary quarters at the Bissell garage on South State street.

Now Royal Equipment Co.—The brake and other accessory business established by the late Arthur H. Raymond in 1902 under the name Royal Equipment Co. has recently been reorganized to carry on the business established by Mr. Raymond. The new company will be known as the Royal Equipment Co., having a capital of $50,000 fully paid in. The officers of the new company will be E. B. Knowles, president and treasurer; L. V. Raymond, vice-president; W. G. Hoag, secretary. The new company begins its business in a new factory five times the size of that previously occupied.

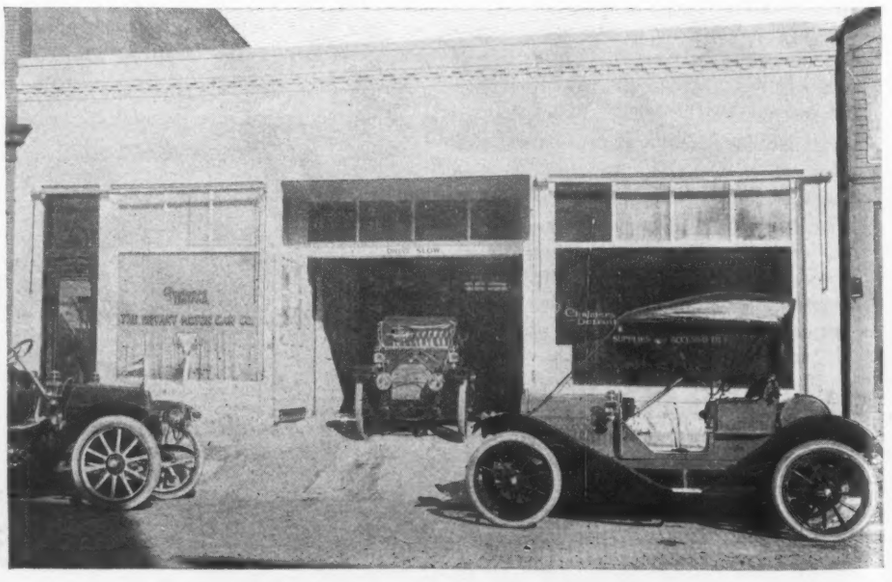
New Omaha Agency—The Gleason Automobile Co. has made its appearance in Omaha. The office of the new agency is at the Central Implement Co. building on Farnam street.

Has a Dallas Branch—The Alamo Automobile Co., of San Antonio, Tex., recently opened up a branch house in Dallas at 319 Commerce street. This firm with J. J. Gorman as manager handles the Stoddard-Dayton line exclusively.

Will Make Motors—Motors for cars and power boats will be a main product of the Walter & Wittig machine shops at Hartford, Wis., home of the Kisselkar, in the near future. The company has been building a stationary engine for farm use.

Buffalo Concern in Courts—In the United States court in Buffalo recently an involuntary petition in bankruptcy was filed against the Hornell Auto School Garage. The petitioning creditors are the Sydney B. Roby Co., of Rochester, the Diamond Rubber Co. and the Steuben Bank of Hornell.

Regal Notes—The Tremain-Rankin Auto Co. has bought out the C. H. Ralston business in Fort Dodge, Ia., and will handle the Regal. The Wilson Co., of Washington, D. C., is the Regal distributor in its section. The Central Auto Sales Co., of Utica, N. Y., has bought out the Empire Auto Co., the central New York distributor for the Regal. The Central Auto Sales Co. handles the Packard and Regal lines. A new brick and stone machine shop is now in course of construction at the Regal Motor Car Co.'s plant in Detroit.



GARAGE OF BRYANT MOTOR CAR CO. AT WATERLOO, IOWA

This new building will be exceptionally well lighted and will be 168 feet deep by 98 feet wide.

Hess-Bright in Chicago—The Hess-Bright Mfg. Co. will open a Chicago branch at 1800 Michigan avenue about January 20.

Starts Another Top Concern—The McAvoy Brothers, of Racine, Wis., manufacturers of motor car tops, windshields, dust and tire covers, have incorporated as the Wisconsin Auto Top Co., with a capitalization of $25,000. The company moved to the large building at Seventeenth street and Hamilton avenue, Racine, January 1.

Kissel Moves—The Kissel Kar Co., of Milwaukee, distributors in a large western territory for the Kissel, of Hartford, Wis., has moved from Fourth and Poplar streets to 228-232 Wisconsin street, Milwaukee, into the quarters formerly occupied by the G. W. Browne Motor Co., recently merged with the Bates-Odenbrett Auto Co.

Big Exposition Billed—Manufacturers of cars and parts in Columbus and central Ohio are taking quite an interest in the arrangements for the made-in-Columbus exposition which will be held June, 1910, at the Ohio state fair grounds. It is the intention of exhibiting products of the Buckeye capital among which will be cars, tires, rims, lamps and many other accessories. A number of the men connected with the motor car industry have been named on the committee of arrangements.

Intends Making Trucks—The Schaefer Co., of Berlin, Wis., will start on a large production of motor trucks immediately after the beginning of the new year. The truck is the work of A. W. Wyman, of Oshkosh, Wis., who first achieved fame through his gasoline locomotive for quarries and lumber camps. This locomotive is manufactured by the Schaefer Co. on a large scale. The company will build the entire truck, having extensive foundry and machine shop facilities.

Columbus Changes—The Iroquois Garage Co., of Columbus, O., with a capital stock of $20,000, was incorporated last week by C. R. Hambleton, H. L. Thurma, Fred Lutchenberg and others to take over the business of the Columbus Garage and Machine Co. located at 35 to 41 West Mound street. The new company will not only take over the garage business, but also the central Ohio agency for the Empire and the Grabowsky trucks. There will be no change in the management of the concern, H. L. Thurma remaining in that capacity. Foster G. Burdell, former director of safety of Columbus; H. M. Myers, his former secretary; Percy D. Newall, Randolph Walter and C. S. Frabes have incorporated the Burdell Auto Sales Co. with a capital stock of $20,000 for the purpose of acting as central Ohio agent for the E-M-F and Flanders. H. D. Sims, who has been assistant secretary of the Columbus Automobile Club for 6 months, has resigned the position to take the position of sales agent for the Charles Schiear Motor Car Co.

NEW ESTABLISHMENT OF MAXWELL-BRISCOE ALBANY CO. AT ALBANY, N. Y.

Lavallette & Co. Move—Lavalette & Co., makers of the Eisemann magneto, formerly at 112-14 West Forty-second street, New York, have removed to more extensive quarters in the new Stoddard-Dayton building, Fifty-seventh street and Broadway. They have taken the entire sixth floor.

Goes With Smith Company—J. N. Cross, for 17 years associated with the Milwaukee mills of the Illinois Steel Co., has been appointed superintendent of the punch and press department of the A. O. Smith Co., of Milwaukee, manufacturer of pressed steel frames, parts and complete motor cars, and now erecting a $500,000 plant.

Opens at Rome—A new garage at Rome, N. Y., on the direct line from New York to Buffalo, has just been opened by A. S. Noonan. The garage is constructed of brick and steel, three stories high 107 by 121 feet. Mr. Noonan, who is one of the oldest dealers in the trade, manufactures the Noonan brand of tools and specialties.

Hudson Company Officers—This is the new personnel of the Hudson Motor Car Co. following its absolute separation from the Chalmers-Detroit Motor Co: J. L. Hudson, chairman board of directors; R. D. Chapin, president; H. E. Coffin, vice-president; F. O. Bezner, secretary; R. B. Jackson, treasurer and general manager.

Has a Model Building—Little Joe Weisenfeld, who handles the Oakland, Hupmobile and Brush agencies in Baltimore, has opened his new five-story motor car garage at 14 and 16 North Howard street. This building is 35 by 105 feet and is used entirely for the various departments of the motor car trade. The salesrooms and offices are on the first floor. The second-hand department is on the second floor, the repair shop on the third and the paint shop and storage on the fourth and fifth floors, respectively.

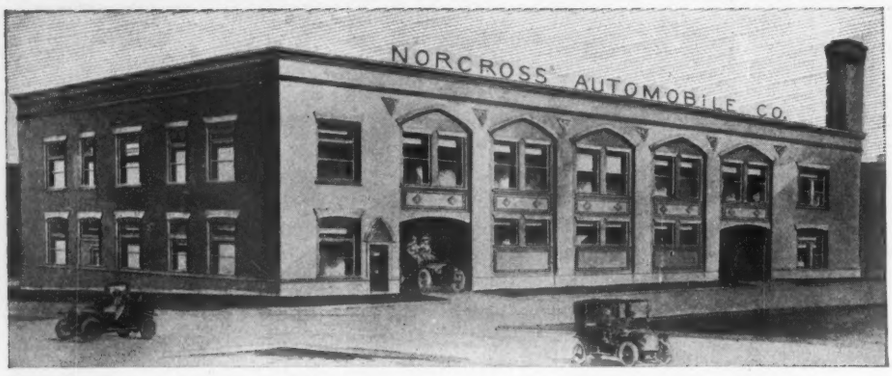
Becomes a Hup Agent—The Syracuse agency for the Hupmobile has been taken by Fred A. Marshall, of East Jefferson street.

Has Mason State Agency—The announcement is made that the American Motor and Supply Co., of Shelby, O., has the state agency for the Mason car. The concern is erecting a fine two-story garage and salesroom.

Parts Plant Starts—The Emergency Drop Forge Co., of Lansing, Mich., has begun operations with a force of half a hundred men. The shops, which are situated on the old fair grounds, are now equipped with machinery and hammers. It was planned to open earlier, but delay in the arrival of machinery prevented the carrying out of the plans.

Has a Lincoln Branch—The H. E. Fredrickson Automobile Co., of Omaha, has completed arrangements for the opening of a branch house at Lincoln, Neb. The Omaha business has grown so large during the last 3 years that a branch house is needed to supply the wants of patrons in other parts of the state. The Lincoln house will handle the same cars as the Omaha establishment.

News From the Northwest—J. L. Robertson, president of the Robertson Motor Co., of Minneapolis, has closed for the agency of Baker shaft-drive electric vehicles in Minneapolis. R. E. Tucker, formerly motor editor of the Minneapolis Tribune, is now with Beek & Floren, of Lakota, N. D., handling the Reo, Velie, E-M-F and Hupmobile lines. The Cole car will be handled in Minneapolis by the new Cole Automobile Co., of which C. P. Davidson, of Los Angeles, is the manager. The Northwestern Stearns Co., re-



NEW GARAGE OF NORCROSS AUTOMOBILE CO. AT WORCESTER, MASS.

cently incorporated to handle the Stearns line of motor cars in the northwest, has opened salesrooms in Minneapolis.

Takes the Mitchell—The Coit Automobile Co. has closed a contract with G. O. Fairchild, of Bertrand, Neb., for the agency of the Mitchell car in Phelps and Gosper counties, Neb.

Supply Company Starts—Articles of incorporation have been filed for the United Motor Supply Co., of Minneapolis, with a capital of $50,000, to carry on a supply business. Large orders have been placed for stock, and the new concern will be ready for business February 1.

Another Indianapolis Plant—A factory will be established in Indianapolis soon by the Direct Drive Mfg. Co., which has just been organized, for the manufacture of transmissions. It is probable the factory will not be built, however, until some time during the spring. The concern has been organized with an authorized capitalization of $50,000 by W. M. Parkinson, W. H. Parkinson, H. E. Parkinson, A. C. Downing, B. F. Meixell and E. O. Call.

Baltimore's Latest—The Dixon C. Walker Motor Car Co.'s new one-story garage, the future home in Baltimore of the Studebaker car, at Charles and Twentieth streets, will be completed the middle of February. The roof will be so constructed that it can be jacked up to allow the addition of one or two more stories. Features of the garage will be the thoroughly equipped chauffeurs' room, the engine room for supplying power for the building, and the dynamo room.

Changes in Northwestern Ohio—A number of changes have been made recently among agencies and garages in northwestern Ohio. At Bryan P. D. Christman has purchased the interests of Ralph Bowersox in a garage at that place and will operate it in the future. Mr. Bowersox still retains the agency of the Buick line there. George P. Lutz, general manager of the Wellington Auto Co., of Napoleon, O., is agent for the E-M-F line in that section. John A. Cron has taken the agency for the Overland at Wauseon. J. W. Calvin has the agency for the Overland at Bryan. The Bryan Hardware Co. at Bryan has taken the agency for the Ford. F. G. Miller & Brother, Defiance, O., are building a number of cars which will be placed on the market soon.

Adds Stearns and Olds—The Sanger Automobile Co., of Milwaukee, representing the Maxwell, has been appointed state agent for the Stearns and Oldsmobile for Wisconsin.

Has Ohio in Ohio—The Francisco Motor Car Co., of Columbus, O., has been organized to handle the Ohio in central Ohio. The new concern will be located at 338 North High street.

Will Expand—The W. G. Nagel Electric Co., of Toledo, has announced its purpose to expand its business and carry a complete line of accessories. Its salesrooms on St. Clair street have been completely remodeled and a large amount of space has been devoted exclusively to accessories.

Buick Branch in Milwaukee—The Buick Motor Car Co., of Flint, Mich., has established a Wisconsin branch, merging the business of the Milwaukee agency, until now held by the Bates-Odenbrett Auto Co., and the state and upper peninsula of Michigan business, conducted by George P. Hewitt, of Appleton, Wis. Mr. Hewitt will be manager of the branch.

Ohio Incorporations—The Cleveland Speed Indicator Co. was incorporated recently with a capital stock of $5,000 by William H. Marlatt and others to manufacture a speedometer. The Booth Dismountable Rim Co., also of Cleveland, was incorporated with a capital of $50,000 by W. N. Booth and others to establish a plant for the manufacture of rims.

New Taxicab Venture—Negotiations for the formation of a taxicab company, primarily for operation in Baltimore, but eventually to extend to Washington, Philadelphia and other large cities, are pending in Baltimore. It is the plan of the proposed company to buy the entire livery business, including the taxicabs, horses, carriages, etc., of Stewart & Co., which entered the taxicab field about a month ago and has twenty-five cars in operation. When the new company is formed twenty-five additional cars will be put in service. The company is to be known as the Stewart Taxicab Co. of Baltimore, to be incorporated in New Jersey with a capital of $100,000. Mr. Stewart will be retained as the local manager.

Moves to Chicago—The R. E. Hardy Co. has moved its spark plug business to Chicago, and will occupy the fourth and skylighted top floor of the new building at 1735 Michigan avenue.

Bought by a Syndicate—The plant of the Dean Mfg. Co., of Seymour, Wis., has been leased by a syndicate which is organizing a company to manufacture trucks and pleasure cars. The foundry and machine shops are now being overhauled in preparation for a large production.

Thomas Makes Statement—"The affairs of the E. R. Thomas Motor Co. are in no way involved in the deal." This was the statement made by E. R. Thomas in connection with the announcement that he and Hugh Chalmers, of the Chalmers-Detroit company, had bought the interest held in the latter concern by Roy Chapin, H. E. Coffin, F. O. Bezner and James Brady.

Matlack's Successor Named—Following the retirement of J. C. Matlack from the Michelin Tire Co., as announced some weeks ago, J. Hauvette-Michelin has been elected vice-president and general manager, with headquarters at the general offices and factory, Milltown, N. J. Mr. Hauvette-Michelin is a nephew of Edouard Michelin, president of the four Michelin factories which are located in America, France, England and Italy.

Renault Agency Switches—Ralph J. Leavitt, formerly manager of the Los Angeles Motor Car Co. and handler of the Locomobile in southern California, and more recently the southern agent for the Renault, has surendered the Renault agency to J. W. Owen, manager of the Alexandria Taxicab Co. Besides handling the big French car in southern California, Owen will conduct a taxicab service, making use of Renault taxicabs.

Will Share With Employes—The Warner Gear Works, of Muncie, Ind., through the action of the board of directors in a meeting held recently, has voted to carry into effect a long-cherished desire of the president, A. L. Johnson, in the form of profit-sharing with their employes. At this meeting an appropriation was made for distribution among such employes as have completed three distinct periods of service. The first class will be constituted of those men who have worked continuously for 3 years, or from December 1, 1906, to December 1, 1909; the second class will include those persons who have been employed for 2 years, or from December 1, 1907, to December 1, 1909; the third class will be made up of those men who have worked at the Warner works for 1 year, or from December 1, 1908, to December 1, 1909. The annual distribution of profits contemplates an apportionment of the earnings of the company drawn from a special appropriation for that purpose,

based on these three terms of service. The idea is to encourage long and efficient association with the company and its interests.

Employing Many Men—The Simplex Motor Car Co., of Mishawaka, Ind., is now employing 200 men, but in the next month it expects to increase the number to 300.

Was a Chase Motor—Through a mistake in captioning an illustration in the Grand Central palace show edition of Motor Age the three-cylinder motor used by the Chase Motor Truck Co. was styled a Coates-Goshen engine. An illustration of the Chase motor is shown on this page.

Croxton-Keeton Will Build—The Croxton-Keeton Motor Co., of Massillon, O., will erect a new plant at Walnut and Canal streets in that city. It is expected to have the plant ready for occupancy by early spring. In the meantime 1910 cars will be made in the present factory.

Transferred to Coast—H. E. Doty, formerly sales manager of the southern half of the western sales department of the White Co., has been transferred to San Francisco and is succeeded in the Chicago office by J. O. Sackman. Mr. Doty hereafter will occupy the position of assistant manager of the Pacific coast department of the White Co., with headquarters in San Francisco.

New Lines For Minneapolis—Announcement was made last week of the coming of five new cars to Minneapolis. The Ohio and the Whiting will be handled by the Great Northern Implement Co. The Robertson Motor Co. will have the Baker electric. The Autocar will be shown by the Nicollet Avenue Automobile Co. This car was sold in Minneapolis 2 years ago. The Matheson will be demonstrated by the Fawkes Automobile Co.

Another Taxicab Concern—The Taxi-Service Co., of Baltimore, has been formed. This company was incorporated in the office of the secretary of state of New Jersey, at Trenton, N. J., with an authorized capital stock of $500,000. The new company will take over the livery business of Stewart & Co., with Mr. Stewart as local manager. Mr. Stewart just recently entered the taxicab business and has nearly thirty cars in operation.

Washington Taxicab Rates—The commissioners of the District of Columbia signalized the end of 1909 by adopting important amendments to the regulations governing taxicab rates. They struck out all double-tariff rates, and provided the following charges for one to five persons. First ½-mile or fraction thereof, 50 cents; each ¼-mile thereafter, 10 cents; each 4 minutes of waiting, 10 cents. The increase from 30 to 50 cents is the principal feature of the amendment. Under the old regulation a taxicab might be sent 2 miles and then carry a passenger a ¼-mile, the tariff for which was only 30 cents. The taxicab companies have agreed to abolish what is known as the double tariff, and hereafter will carry any number of pasengers from one to five at the same fare.

Another Rambler Building—Thomas B. Jeffery & Co., of Kenosha, Wis., makers of the Rambler, have accepted plans for a large new office building, to be erected next spring.

Handling the Meteor—The Palace Motor Car Co. of Baltimore has taken on the agency for the Meteor. This company has only been in operation about 2 weeks, when it opened up as representative for the Kline. It still retains that agency.

Capital Stock Increased—Increasing its capital stock from $20,000 to $30,000, the Muskegon Motor Specialties Co., of Muskegon, Mich., has begun making preparations for handling a larger business. C. E. Johnson is president of the company and C. L. Chamberlain is secretary. These, with J. W. Wilson, form the board of directors.

Starts at Portage—The Cook-Jones Auto Co. has been organized at Portage, Wis., to handle the Studebaker gasoline and electric cars. The Emporium block has been leased and is now being remodeled into a garage and salesroom. A livery and accessories department will be established. James R. Jones was for several years associated with the Hokanson Automobile Co., of Madison, Wis.

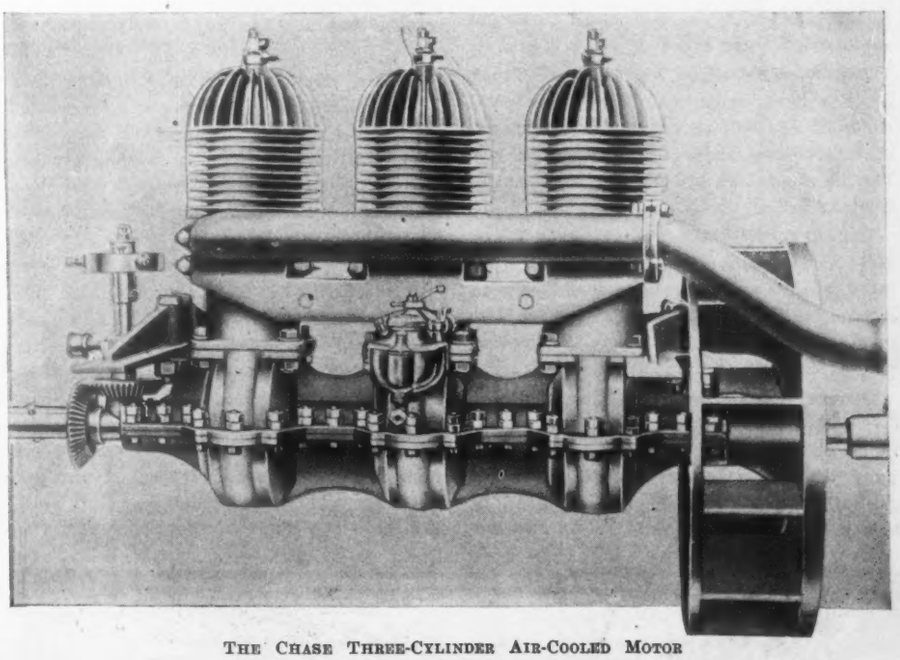
Show in Montreal—E. M. Wilcox, who is manager of the Toronto show, has accepted the invitation of the Automobile and Aero Club of Canada, Montreal, to manage the motor and sportsmen's exhibition of Montreal under the auspices of that club. This show has no connection with any show previously announced and will be the only one officially sanctioned by the Montreal Automobile Club in 1910. It will be held in the Coliseum building, which is admirably suited for the purpose, all the space being on the ground floor and under one roof. The date of the show is March 26 to April 3.

Chicago E-M-F Agent—The Chicago E-M-F Co. has been organized to handle the E-M-F car in the Windy City. The concern has located in the former Oldsmobile store at Michigan avenue and Twenty-first street.

Buys Patterson Business—The Ohio State Auto Co., of Columbus, O., has been incorporated with a capital stock of $20,000 to take over the garage business at 121 Third street now operated by R. L. Patterson. Mr. Patterson some time ago bought out the business from F. H. Lawell. The incorporators are R. H. Kissinger, F. S. Armstrong, Kerr H. Hosey, R. L. Patterson and Theodore A. Patterson.

Selden Agencies—The Selden agency has been established in Kansas City, Mo., with the Selden Motor Car Sales Co., 913 East Fifteenth street. The business will be in charge of M. B. Russ. J. V. Moore has secured the Selden agency for Oklahoma City, Okla. The Selden will be represented in Chicago by the Bullock Motor Co., the principal owners of which will be T. H. Bullock and P. D. Bauld. The recently incorporated F. A. Ballou Co., Buffalo, N. Y., will represent the Selden car in that city.

De Jongh Sells Out—Ivan L. de Jongh, who has conducted a repairing establishment in San Francisco, has sold his plant to the Standard Motor Car Co., northern California representative of the Ford and Velie cars, which has installed the machinery in its new brick building at the corner of Van Ness and Golden Gate avenues. De Jongh remains in charge of the repair department, and at the same time becomes assistant manager of the Standard Motor Car Co.



THE CHASE THREE-CYLINDER AIR-COOLED MOTOR

Brief Business Announcements

Kansas City, Mo.—The Franklin Motor Car Co. is now located at 3320 Main street.

Trenton, N. J.—C. B. Ackers has just been appointed agent in this city for the Manhattan truck.

New York—The Willis Can and Auto Co., of 104-106 West Fifty-ninth street, has filed a petition in bankruptcy.

Temple, Tex.—Mitchell & Foyt are to dissolve partnership and in the future Mr. Foyt is to continue the garage business.

Milwaukee, Wis.—The Cream City Trimming Co., manufacturer of tops, is about to erect a new building at Juneau avenue and Market street.

Trenton, N. J.—The Demotcar Co, of New Jersey has been incorporated with a capital stock of $1,000,000 by F. T. Lodge, S. Clarke and J. G. Kreig.

Temple, Tex.—W. C. Knight has disposed of his interest in the motor car business to L. S. Williamson and T. J. Laramay, who are to continue the business.

Lincoln, N. J.—The Bongartz company of New York has purchased a factory site here and will erect a new building. The company is engaged in the manufacture of accessories.

Boston, Mass.—The Parry Boston Co., Inc., commenced business in this city on January 1, under the management of W. A. Webber. Mr. Webber has established temporary headquarters at 24 Columbus avenue.

Philadelphia, Pa. — Application will shortly be made for a charter for the Carlson Motor Vehicle Co., which will engage in the manufacture of motors, motor cars, motor trucks, as well as all parts and appliances of the same.

Buffalo, N. Y.—The Victor Motor Truck Co. has been incorporated with a capital stock of $30,000, to engage in the manufacture of vehicles, motors, engines, etc. The incorporators are H. B. Clark, O. L. Neal and B. E. Neal.

Indianapolis, Ind.—The Direct Valve Mfg. Co., of this city, has been incorporated with a capital stock of $50,000 to engage in the manufacture of parts. The incorporators are W. M. and W. H. Parkinson, H. E. Parkinson and A. A. Downing.

Denver, Colo.—The W. C. Fawcett Motor Co. will have a new garage and salesroom at 1249-1255 Broadway. The company, which was recently organized with a capital stock of $25,000, is the agent in this city for the Regal. W. C. Fawcett is the president and treasurer, while the duties of secretary and vice-president are in the hands of George Packer.

Memphis, Tenn.—The Blomberg Automobile Co. has purchased the property on Monroe street, east of Wellington street, and will at once begin the erection of a garage.

Albany, N. Y.—The Autoparts Mfg. Co., of New York city, has been incorporatded with a capital stock of $100,000, to manufacture cars, parts, etc. The incorporators are J. W. A. J. Wetmore, W. G. August and A. Schaible.

Baltimore, Md.—The White Automobile Co. has leased from L. T. Appold the ground on which the company is erecting its new garage at Mount Royal avenue and Hunter alley.

Newark, N. J.—A. G. Spalding & Brother have leased the store formerly occupied by H. J. Koehler at 849 Broad street. They will carry a full line of sporting goods, and also will act as agents for the Stevens-Duryea.

Nashville, Tenn.—S. E. Duff, of the Star Rubber Co., of Akron, O., has concluded arrangements for the establishment of a branch in this city. W. A. Anderson, of the Rock City Auto Co., has been chosen as manager and headquarters will be located at Third avenue and Commerce street.

Minneapolis, Minn.—Announcement has been made of the proposed organization of the Hughes Motor Car Co., which is to represent the Rauch & Lang cars in this city. The new company is planning to erect a garage and charging station at a cost of $20,000, and has already purchased a site at Harmon place and Twelfth street.

Dover, Del.—The Rae Electrical Vehicle Co., which is a corporation organized under the laws of this state, but with headquarters in Boston, has announced that the name of the concern has been changed to the Rae Electrical Equipment Co. The capital stock of the company has been increased from $250,000 to $2,000,000.

Bridgeport, Conn.—As a result of the settlement of the estate of A. H. Raymond, the Royal Equipment Co. has been dissolved, and will be succeeded by two separate concerns. One company, the Royal Engine Co., will occupy the present plant of the old concern, and will engage exclusively in the manufacture of gasoline engines, while the other company will locate in the plant of the Bridgeport Gas Light Co., and will manufacture accessories. The latter concern will use the name of the Royal Equipment Co.

Denver, Colo.—S. H. Pierce has been appointed manager of the local branch of the Ajax Tire Co.

Kansas City, Mo.—In the future the Economy Sales Co., of 1424 McGee street, are to act as western distributor for the Economy Motor Car Co., of Joliet, Ill. H. M. Brooks and J. G. White are the members of the company.

Brooklyn, N. Y.—The Grant Square Auto Co., of 1370 Bedford avenue, has been appointed agent for the Halladay car, manufactured by the Streator Motor Car Co., of Streator, Ill. The Grant company will also continue to represent the Pennsylvania and Chadwick car.

Harrisburg, Pa.—The Motor Supplies Co., of Philadelphia, has an application pending for a state charter, and objections have been filed by the Motor Supply Co., of the same city, on the ground that the similarity of names would cause confusion. As yet no decision has been rendered.

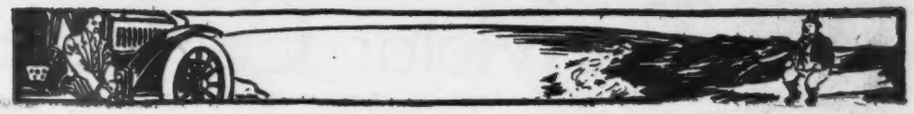
Trenton, N. J.—O. M. Driscoll and Oliver Twist, members of the new firm formed to represent the Hupmobile and Mitchell cars in this city, are planning the establishment of a new garage and repair plant at South Clinton avenue. For the present they will be located at the Dorsett garage on Chancery street.

Knoxville, Tenn.—A new car factory is shortly to be established in this city. Charles Du Foure is backer of the new concern, and a number of other Knoxville persons are interested in the scheme. The company will manufacture commercial cars only. Mr. Du Foure is to be manager of the company.

New Haven, Conn.—The Belmont Automobile Mfg. Co., which was formerly located in Castleton, N. Y., is now installed in its new factory at State and Lawrence streets, and has a large force busy turning out the Belmont 30, which is now ready for the market. J. H. O'Brien has been appointed factory manager.

Trenton, N. J.—At a meeting of local stockholders of the Sharp-Arrow Automobile Co., negotiations were completed whereby the International Boiler Co., of Stroudsburg, Pa., invested $50,000 in a new company and obtained control of the Sharp-Arrow company. Four of the Trenton stockholders have sold out, and William H. Sharp, who was the designer of the car, has sold his patent rights in the old company to the new one. In the future Mr. Sharp will be in the employ of the International Boiler Co. as designer and

manager, and the car will be manufactured in the new company's plant at Stroudsburg.



Austin, Tex.—The Brownlee Auto Co., of San Antonio, has established a branch agency in this city.

Lansing, Mich.—The Auto Automatic Wind Shied Co. has increased its capital stock from $5,000 to $10,000.

Lynchburg, Va.—A new company is to be organized here under the name of the Apperson-Lee Motor Co. and is to operate a garage.

Fresno, Cal.—W. H. McKinnon, of Oakland, is making arrangements for a new garage, which is to be located at Merced, Tuolumne and I streets.

Nashville, Tenn.—Louis R. Dorris, of the Auto and Livery Repair Co., has announced that in the future he will devote his entire attention to taxicab service.

Cleveland, O.—The Pennsylvania Rubber and Automobile Co., of 145 Euclid avenue, has been appointed distributing agent for the Continental Caoutchouc Co.

Philadelphia, Pa.—The Standard Motor Car Co., of 614 North Broad street, has made a contract with the Velie Motor Vehicle Co. for the agency in this city and vicinity.

Bayonne, N. J.—The Bayonne Automobile Garage Co., of 764-766 Boulevard, has been incorporated with a capital stock of $5,000 and is to conduct a general garage business.

Dover, Del.—The Standard Wheel and Motor Co., a concern which has its home offices in Rochester, N. Y., has been incorporated under the laws of this state, with a capital stock of $500,000.

New York—G. F. Aitken, formerly associated with the Thomas Flyer Renting Agency as vice-president and general manager, is now connected with the sales department of the E. R. Thomas Motor Co.

Scranton, Pa.—Application is shortly to be made for a charter for a new company to be known as the Anthracite Motor Car Co., which is to engage in the manufacture of motor cars, accessories and appliances.

Des Moines, Iowa—The Mason Automobile Co. has changed its name to the Maytag-Mason Motor Co. and has increased its capital stock to $1,000,000. Plans are being made for the removal of the plant to Waterloo, Iowa.

Kansas City, Mo.—The Inter-State Automobile Co. has been appointed agent for the Broc electric. The company, which has a garage at 2408 Grand avenue, is also the representative of the Inter-State, Parry and Buffalo commercial cars.

Boston, Mass.—The United Vehicle Co. has removed its business offices from State street to 107 Massachusetts avenue, which in the future is to be the local headquarters of the concern. The company has purchased a factory at Woodville, and has already let a contract for the erection of a new building to be used as general factory offices.

Indianapolis, Ind.—The Van Camp Hardware and Iron Co. is to act as agent for the Randolph.

New York—The Peerless Motor Car Co. has opened its new headquarters on the row. It has an attractive building.

Pittsburg, Pa.—The Morewood Garage, a newcomer in the local field, is to be opened at Center and Morewood avenues.

Houston, Tex.—S. R. Nemo, of the Parmele-Wroe Automobile Co., has closed with W. Westhoff & Co., of Edna, to act as agent for the Buick.

Indianapolis, Ind.—Articles have been filed by the Newby Automobile Co., of Newcastle, giving notice of the change of name to the Maxwell-Briscoe-Newby Co.

Hightstown, N. J.—The Hightstown Auto-Transportation Co. has been organized with a capital stock of $25,000 and is to do a general passenger and messenger service between this city and Trenton.

El Paso, Cal.—C. M. Barber, who is the representative for the Reo and Oldsmobile cars in this city, has planned to open a salesroom on Myrtle avenue. He will continue his garage on North Santa Fe street, and eventually the supply house, which is now located on Stanton street, will be removed to the new salesroom.

Boston, Mass.—The Curtis-Hawkins Co., agent for the Speedwell, has leased headquarters at 162-172 Columbus avenue.

Houston, Tex.—Plans have been filed for the erection of a garage at Capitol avenue and Milam street for Henry House. The new building will cost about $10,000.

Topeka, Kan.—O. W. Weninke and C. M. Greenway, of Grand Rapids, Mich., have been in this city for several days negotiating with the Smith Automobile Co. It is understood that they are endeavoring to induce the Smith company to remove to their city.

Newark, N. J.—The Lovell-McConnell Mfg. Co., which is engaged in the manufacture of accessories, has outgrown its present quarters and has purchased ten lots on Wright street and two lots on Emmet street, where a new factory is to be erected.

Wabash, Ind.—The Motor Inn Co. has been organized here with a capital of $10,000, and is to act as agent for several cars, and will also do general repair, garage and livery work. Among those interested are F. B. Walter, S. C. Cowgill and M. C. Honeywell.

Some Recent Motor Incorporations

West Orange, N. J.—Mumford Molding Co., capital stock $125,000, to manufacture motors, engines, machines, etc.; incorporators, W. D. Sargent, G. M. Judd and E. H. Fallows.

St. John, Mo.—Gilmore Automobile Co., capital stock $10,000.

Atlanta, Ga.—McNabb Iron Works, capital stock $100,000, to manufacture small motor cars.

Saginaw, Mich.—Davis-Draper Auto Co., capital stock $3,000.

Detroit, Mich.—U. S. Auto Top Co., capital stock $20,000.

Detroit, Mich.—Automobile Mfg. Parts Co., capital stock $50,000.

Corliss, Wis.—Corliss Motor Co., capital stock $1,000,000.

Baltimore, Md.—Taxi Service Co., capital stock $50,000, to manufacture motor cars and conduct a general taxicab business; incorporators, F. C. McKinney, J. R. Mapleton and R. E. Taylor.

Milford, Del.—Milford Garage and Repair Co., capital stock $5,000, to deal in and repair motor cars and motor vehicles; incorporators, W. H. Robinson, W. A. Webb and L. N. Hearn.

Buffalo, N. Y.—F. A. Ballou Co., capital stock $25,000, to manufacture and deal in boats, bicycles, motor cars and other vehicles; incorporators, F. Ballou, C. H. Phillips and H. J. Harrison.

Garrett, Ind.—Hoosier Auto Co., capital stock $80,000; incorporators, J. A. Moore, T. C. Little, J. B. Mager and others.

Terre Haute, Ind.—Haworth-Cole Auto Co., capital stock $1,000, to deal in motor cars; incorporators, A. B. Haworth, H. J. Cole and D. V. Miller.

Haverhill, Mass.—Central Garage Co., Inc., capital stock $10,000, to do a general motor car business; incorporators, H. F. Small, W. J. McDonald and J. W. Small.

New York—Accessories Supply Co., capital stock $10,000, to manufacture and deal at wholesale in motor cars; incorporators, V. K. Smith, E. P. Steers and C. P. Rogers.

Augusta, Me.—Belgrade Automobile and Garage Co., capital stock $10,000, to engage in a real estate and motor car business; incorporators, C. A. Hill and H. F. Travis.

Ithaca, N. Y.—Inter-Urban Motor Co., capital stock $8,000, to manufacture and deal in vehicles of all kinds. Incorporators, O. L. Stewart, G. C. Mowry and W. H. Arden.

Chicago—Loop Garage Co., capital stock $2,500, to do a general motor car and garage business; incorporators, J. H. McGay, J. J. Downey.

Chicago—Enterprise Automobile Repair Co., capital stock $2,500, to deal in motor cars as well as conducting a garage; incorporators, C. G. Woll, C. W. Huck and J. E. Hurtboise.

Trenton, N. J.—C. W. Weeden Motor Co., capital stock $100,000, to manufacture motor vehicles, etc.; incorporators, C. P. and B. Weeden and J. S. Valentine.

Chicago—Dan Canary Taxicab Co., capital stock $15,000, to do a general motor livery and transportation business; incorporators, A. R. Hurlbert, F. J. Haake and S. S. Gorham.

Dallas, Tex.—Childress Brush Motor Co., capital stock $5,000; incorporators, B. M. and S. C. W. Childress and R. M. Hardman.

Jacksonville, Fla.—Jacksonville Motor Car Co., capital stock $20,000, to do a general motor car business; incorporators, S. A. Morris, W. L. Muser and C. J. Mason.

Detroit, Mich.—Briggs Mfg. Co., capital stock $50,000, to manufacture motor car canopies; incorporators, W. D. Briggs, F. M. Shinnick and R. S. Everitt.

Asbury Park, N. J.—Asbury Park Automobile Co., capital stock of $50,000, to manufacture motors, conduct a garage, etc.; incorporators, D. Havens, F. T. Weeden and W. C. Weeden.

Newark, N. J.—Wind Shield Mfg. Co., capital stock $100,000, to manufacture wind shields, motor car specialties, etc.; incorporators, C. A. Metzger, R. H. Montgomery and R. M. Owen.

New Orleans, La.—Aschaffenberg Motor Co., capital stock $100,000; incorporators, A. and L. G. Aschaffenberg and C. W. Ziegler.

The Motor Car Repair Shop

Hints to the Amateur

TO THOSE who have had the experience of being scalded on removing the cap of a steaming radiator, the following precautions probably come too late, and a reminder hardly is necessary. A steaming or boiling radiator is the result of an overheated motor, this overheated condition generally being brought about through the use of a poor grade of oil, insufficient lubrication, bad mixture, slow spark, diminished water supply, a broken pump, a flat or obstructed water pipe or connection, a broken or slipping fan belt, preignition from carbon in the cylinders or valves out of time, or an obstructed muffler. When a motor overheats until the water boils in the radiator it should be stopped immediately; the radiator cap should be removed with care, so that the steam may escape more readily; the hood might then be raised to facilitate the cooling of the cylinders, and cold water can be slowly poured into the radiator to replace that which has been boiled out. Do not, under any circumstances, pour water on the cylinders to cool them. It is not an uncommon occurrence for a car to come into the repair shop with a steaming radiator, and the writer has found it convenient, in removing the radiator caps, to place a bunch of waste over the cap which is generally quite hot, and spread a cloth or a rubber apron, or a rubber faced lap-robe over both the cap and radiator; the cap may then be removed without burning the hands, and without danger of being scalded by the hot water and steam, which would otherwise fly in all directions. This advice is prompted by a recent experience. A short spin was taken in a car which had been standing out on the street in the cold with a lap-robe over the radiator to keep it warm. On starting out, the driver neglected to remove the robe from the radiator, and at the end of the drive, which was less than a ½-mile in length, steam was blowing from the overflow pipe of the radiator. The owner then unscrewed the cap of the radiator, and as he did so it flew from his hand, water and steam gushed from the opening, and bespattered his clothing. Fortunately, the water was not as hot as it might have been and the owner jumped nimbly away.

FIG. 1—BEWARE OF STEAMING RADIATOR

Removing the Clutch

Many of the American cars which are fitted with a regular cone clutch, are of the type shown in Fig. 2, with the clutch bearing on a spindle L formed by the end of the crankshaft of the motor which extends through the center of the flywheel. The clutch spring S bears on the clutch at E, and through a ball thrust bearing B it is held in place by the nut N on the end of the spindle L. In order to remove a clutch of this kind from the flywheel, it is necessary to remove the nut N. Care should be exercised in doing this, and if the tension of the spring is very great, provision should be made to take the thrust off the nut while it is being removed from the last few threads, otherwise they may be torn off. This may be done with the jaws of a common monkey wrench in the following way. The jaws should be opened just wide enough to allow the nut to turn between them; the wrench then should be inserted with the back resting against the universal coupling or yoke of the coupling shaft, and the open ends of the jaws bearing on the ball thrust. As soon as the thrust is taken off the nut it generally can be easily removed with the fingers. The wrench can be removed then, the couplings and clutch operating mechanisms dis-assembled, the gear-box lowered if necessary, and the clutch removed from the flywheel. If a monkey-wrench with jaws of sufficient length is not at hand, a little block of hard wood sawed up as shown at W will serve the purpose just as well and perhaps better. The same system may be used in starting or replacing the nut N when the clutch is again re-assembled.

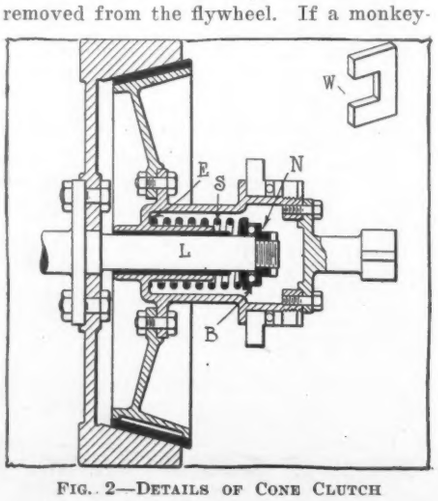


FIG. 2—DETAILS OF CONE CLUTCH

Use and Misuse of Waste

In almost all branches of mechanics, for the cleaning up of machinery and the hands of the workman, waste almost is an indispensable article; but as extensively as it is used, its proper use is either unknown or ignored in the majority of our motor car repair shops. It does not take the young repairman long to learn that a round paint brush and a pan of gasoline are far superior to a bunch of waste for cleaning up a motor; that is, if he is given a chance to try them both. But many are denied these luxuries, through a spirit of economy on the part of their employer. A very good brush can be purchased for 35 cents with which, perhaps, all the parts of ten or fifteen complete motor cars, including motors, transmissions, rear axles, etc., could be effectively cleaned up, and only a very reasonable amount of gasoline required. For cleaning up the parts of a single car with waste, a pound of waste hardly would be sufficient, at least 1 gallon more of gasoline would be necessary to replace that which is splashed about when waste is used; and at this rate, when it is figured up, to clean up 10 cars, 10 pounds or more of waste would be used, which, at 10 cents a pound, would cost about three times the price of a brush; 10 gallons more of gasoline probably would be wasted, which, at 15 cents a gallon, would come to more than the cost of four brushes; and then to say nothing of the time occupied in picking sheds of waste off cotter pins and the like, it is plain that the employer is somewhat off in his economy. Another case in which waste is erroneously used, is in wiping up bearings, connecting-rods, pistons, crankshafts and the interiors of crankcases, etc., just prior to their final assembly. Thousands of little fibres of waste adhere to the surfaces of these parts, and later on when the motor is in action the oil collects these little fibres and conducts them to some constricted portion of the system, where they accumulate until the flow of oil through that duct is inhibited to such an extent that a burnt-out bearing is the result. To avoid this practice, one of the greatest gas motor factories of Germany supplies each of its mechanics with a pair of cloths about the size of a small face towel. These cloths are collected each week and laundered, so that at the beginning of each week the workman is provided with a fresh, clean set of cloths.